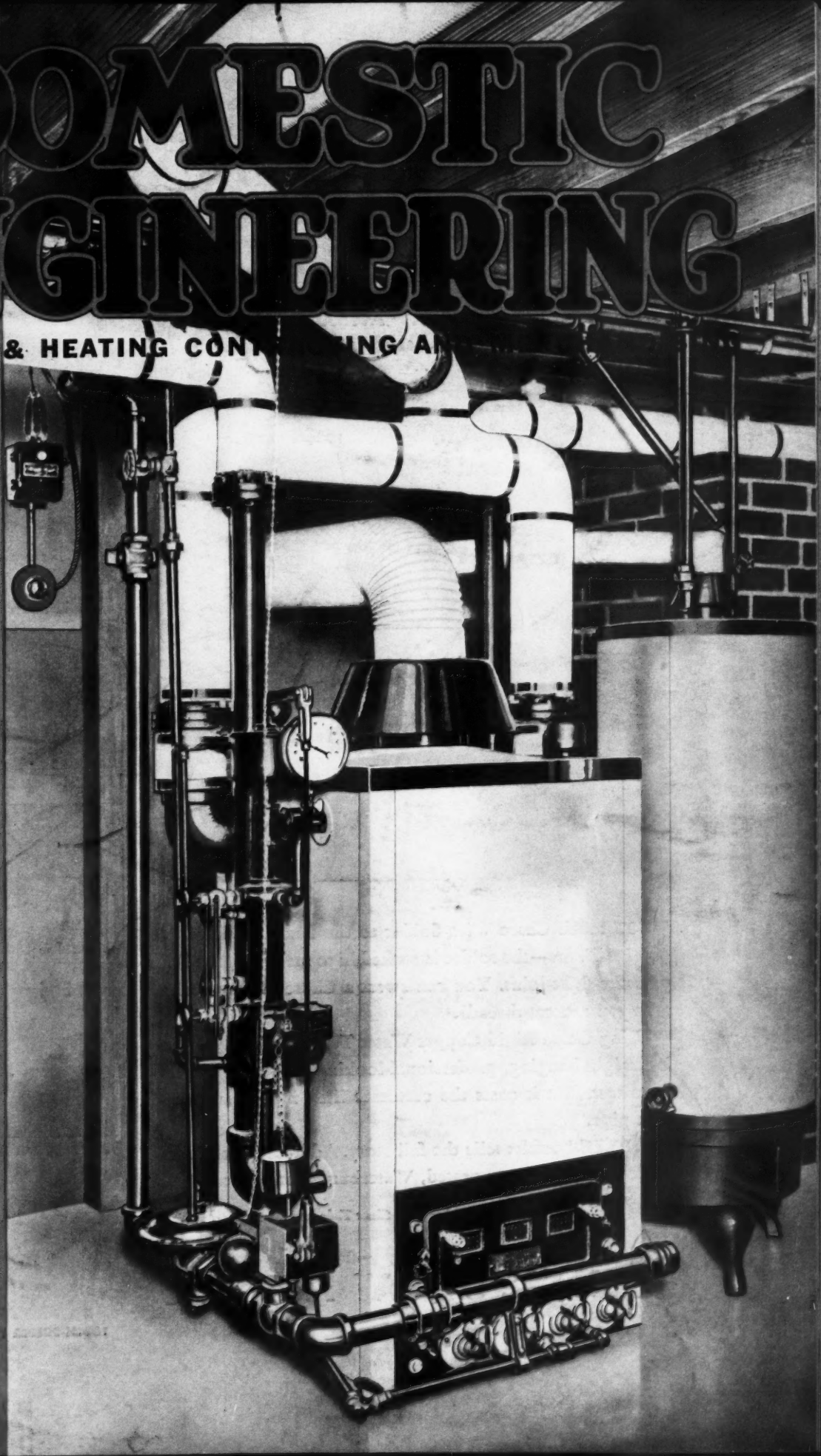
OHIO
UNIVF
JAN 12
LIBR

DOMESTIC ENGINEERING

PLUMBING & HEATING CONT ING A



lled Salesmanship
Finished Crafts-
ship on Every
ail (as in this
ure of One of
Jobs) Make this
ntractor Feel that
Will Profit from

odernizing
in 1933

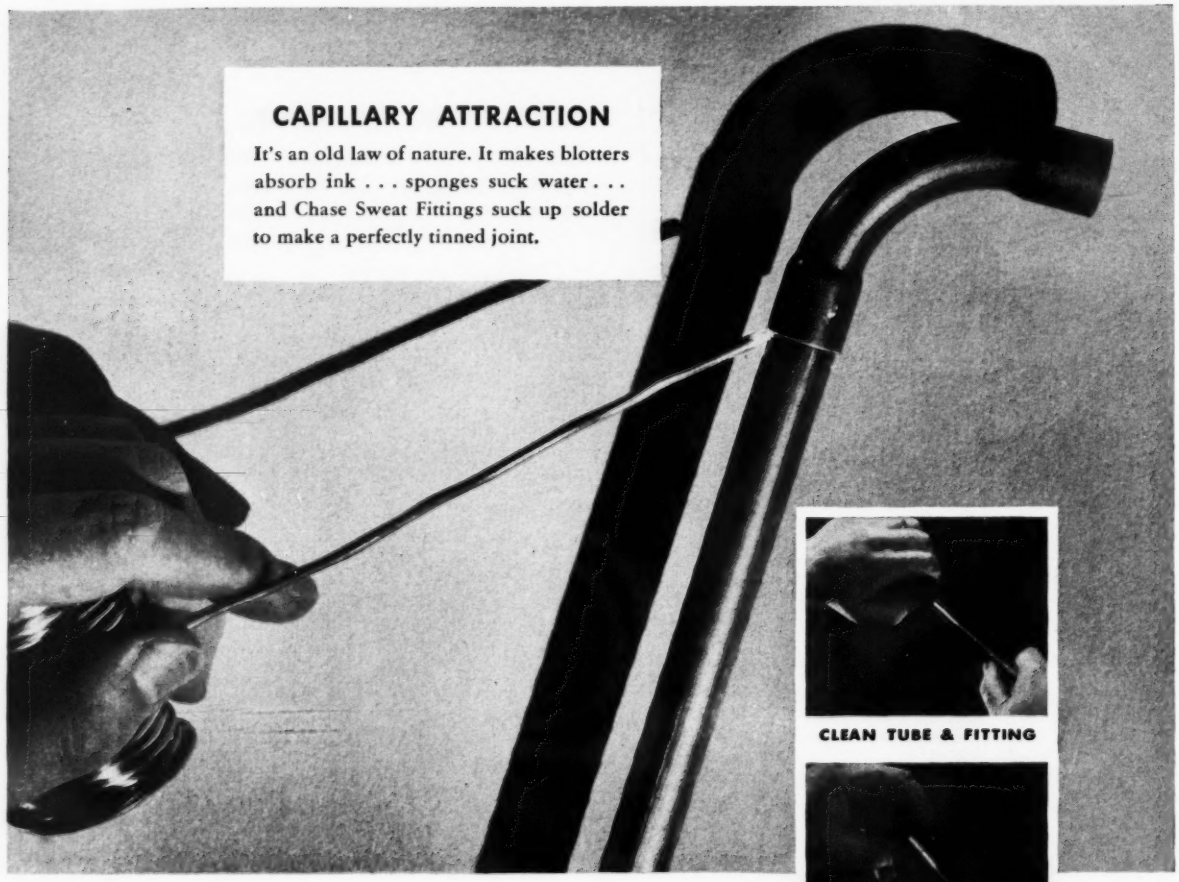
TD
1*
D66
v.141

UTOMATIC HEAT and
AIR CONDITIONING
DEALER SECTION
PAGE 71

JANUARY
1933

NATURE'S MAGIC LAW

. . . *makes Chase fittings work*


CAPILLARY ATTRACTION
It's an old law of nature. It makes blotters absorb ink . . . sponges suck water . . . and Chase Sweat Fittings suck up solder to make a perfectly tinned joint.

CLEAN TUBE & FITTING

APPLY FLUX TO BOTH

APPLY TORCH TO JOINT

TOUCH SOLDER TO JOINT

JUST touch Chase Wire Solder to the fluxed and heated joint. *Presto*—the solder is sucked in to make a 5,000-lb.* pressure-tight joint. You can sweat a Chase Fitting easier than you can cut threads.

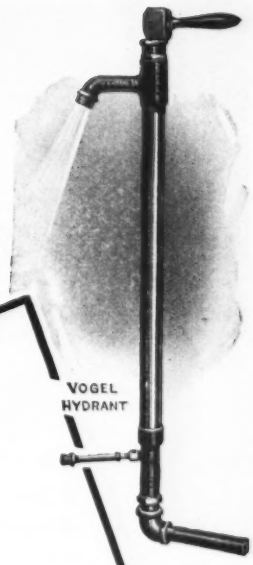
Using Chase Rigid Copper Water Tube, the finished line is straight-hanging, professional-looking, and forever-free-from-rust. Yet it costs the customer little more than rustable pipe.

A FREE booklet tells the full story. Address Chase Brass & Copper Co., Incorporated, Waterbury, Connecticut.

**Tests made on half-inch Chase Tube and Chase Sweat Fittings*

CHASE SWEAT FITTINGS

• Here's a letter from Mr. Many that proves what can be done when you make good use of Vogel Direct-by-Mail helps—*supplied* ***FREE!***



Philadelphia, Pa., Nov. 29, 1932

Joseph A. Vogel Company,
Wilmington,
Delaware

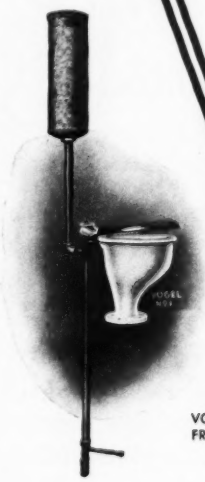
Dear Sir:

I wish to thank you for your blotters, and I also wish to inform you that in my 18 years in the Plumbing Trade I never sold one hydrant, but plenty of the toilet outfits.

Since I put out your blotters, which was last May, I have sold 12 of the hydrants, and they are the finest hydrants that can be bought for the money. I want to thank you again for the blotters I received today and also hoping that I can sell 12 more soon. It's a pleasure to install a Vogel Hydrant, and a pleasure to the users.

I thank you.

Chris. Many
4125 "M" St.



VOGEL No. 1
FROST-PROOF
CLOSET

Plumbers who use Vogel folders and blotters, imprinted with their name and address, are getting extra jobs and extra profit. Check your list of customers and let us know how many folders and blotters you need.

JOSEPH A. VOGEL COMPANY
Wilmington, Del. St. Louis, Mo.

• VOGEL PATENTED *Products* •

DOMESTIC ENGINEERING

Plumbing & Heating Contracting & Merchandising

Established 1889

Vol. 141 No. 1 January, 1933 Whole No. 1978

Published Monthly by
Engineering Publications, Inc.
1900 Prairie Avenue, Chicago

F. P. KEENEY
President and Treasurer

E. DE FOREST WINSLOW
Vice President

O. T. CARSON
Secretary

EDITORIAL STAFF
R. V. Sawhill,
Editor
R. Herlov, Chas. E. Price, L. W. Britton, Wm. W. Gothard,
Associate Editors
R. M. Starbuck, Jr.,
Consulting Editor on Plumbing

ADVERTISING REPRESENTATIVES
E. G. Hutchison, R. Payne Wettstein, Wallace J. Osborn, H. J. Carr, D. M. Kenney, Robert A. Jack, A. T. Papineau, I. W. Hoff

FIELD REPRESENTATIVES
Thomas H. Craige, Thomas J. Foley, J. Urban Foley, John R. Lewis, J. L. Glynn

BRANCH OFFICES
NEW YORK—
Rooms 1706-1707, 110 East 42nd St.
PITTSBURGH
Room 604, Chamber of Commerce Bldg.

TERMS OF SUBSCRIPTION
Anywhere in the World, except Canada, $2.00 per year. Canada $3.00 per year
Current copies, 25c each
Back numbers, 50c each

Entered as Second Class Matter on September 26, 1932, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

Copyright 1932, by Engineering Publications, Inc.

Member of Audit Bureau of Circulations

IN THIS ISSUE

Page

1932 Experience in Modernization Jobs Means Profit in '33. By C. B. Magruder . . . 30
Electricity Is Used to Thaw Frozen Pipes . . . 33
What's Wrong with This Vapor Heating Job? By Wm. W. Stevens . . . 36
How to Guard Against, Learn, and Classify Blemishes in Iron Enamel-Ware Finishes . . . 38
Where to Look for Selling Ideas . . . 42
Air at 63 and Walls at 80 Give Comfort in This Panel Heating Job. By L. W. Schad . . . 45
Co-Operation with Utilities in Two Cities Based on Mutual Confidence . . . 48
How Plumbing Makes for Efficiency in Institutional Kitchen. By R. M. Starbuck . . . 50
$1,683,656 of Gas Appliances Sold by Dealer-Help Plan. By Hugh H. Cuthrell . . . 99

AUTOMATIC HEAT AND AIR CONDITIONING DEALER SECTION

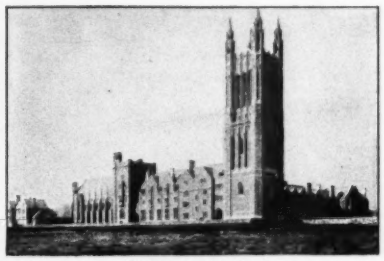
Modernizing Heating Plant with Air Conditioning . . . 73
Trouble Inspection Report. By O. W. Thomas . . . 76
Code for Testing Oil Burners. By L. E. Seeley . . . 78
Comfort Temperatures in Air Conditioning. By Malcolm Tomlinson . . . 83
New Developments in Products for Dealers . . . 86

SPECIAL DEPARTMENTS

Editor's Page . . . 24
Our Industry . . . 27
Retail Advertising Service . . . 52
Questions and Answers . . . 54
Letters to the Editor . . . 63
Items for Store, Shop and Job . . . 67
Supply News . . . 91
Markets . . . 102
The Trade . . . 104
Convention Dates . . . 110
New Trade Literature . . . 114
Woman's Page . . . 119
Plumbing and Heating Patents . . . 125
Index for Vol. 140 . . . 133
Index to Advertisers . . . 136

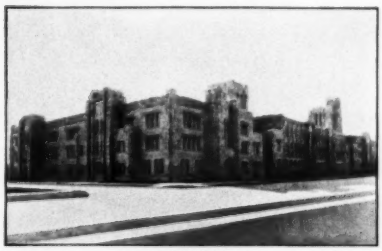
The Lesson Taught In *these* Educational Buildings—

UTAH
Kingsbury Hall, University of Utah

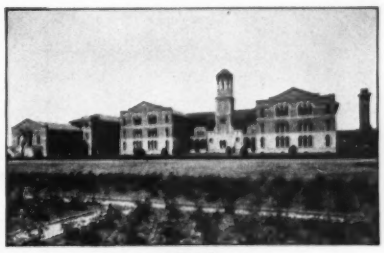


NEW JERSEY
Graduate College at Princeton

ILLINOIS
Ida Noyes Hall, University of Chicago



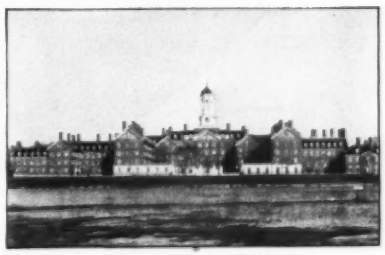
INDIANA
Butler University, Indianapolis



TEXAS
Rice Institute, Houston

Specify **BYERS**

Wrought Iron Pipe for Corrosive Conditions



MASSACHUSETTS
Dunster House, Harvard

EDUCATIONAL buildings throughout the country have been a "laboratory" for proving the long life of wrought iron pipe under corrosive conditions. Decades of almost faultless service in the older buildings have been largely responsible for putting wrought iron into the newer structures.

May we review with you some of the long time service records that have backed up the specifications of wrought iron for corrosive services in educational, commercial, medical, public and other buildings?

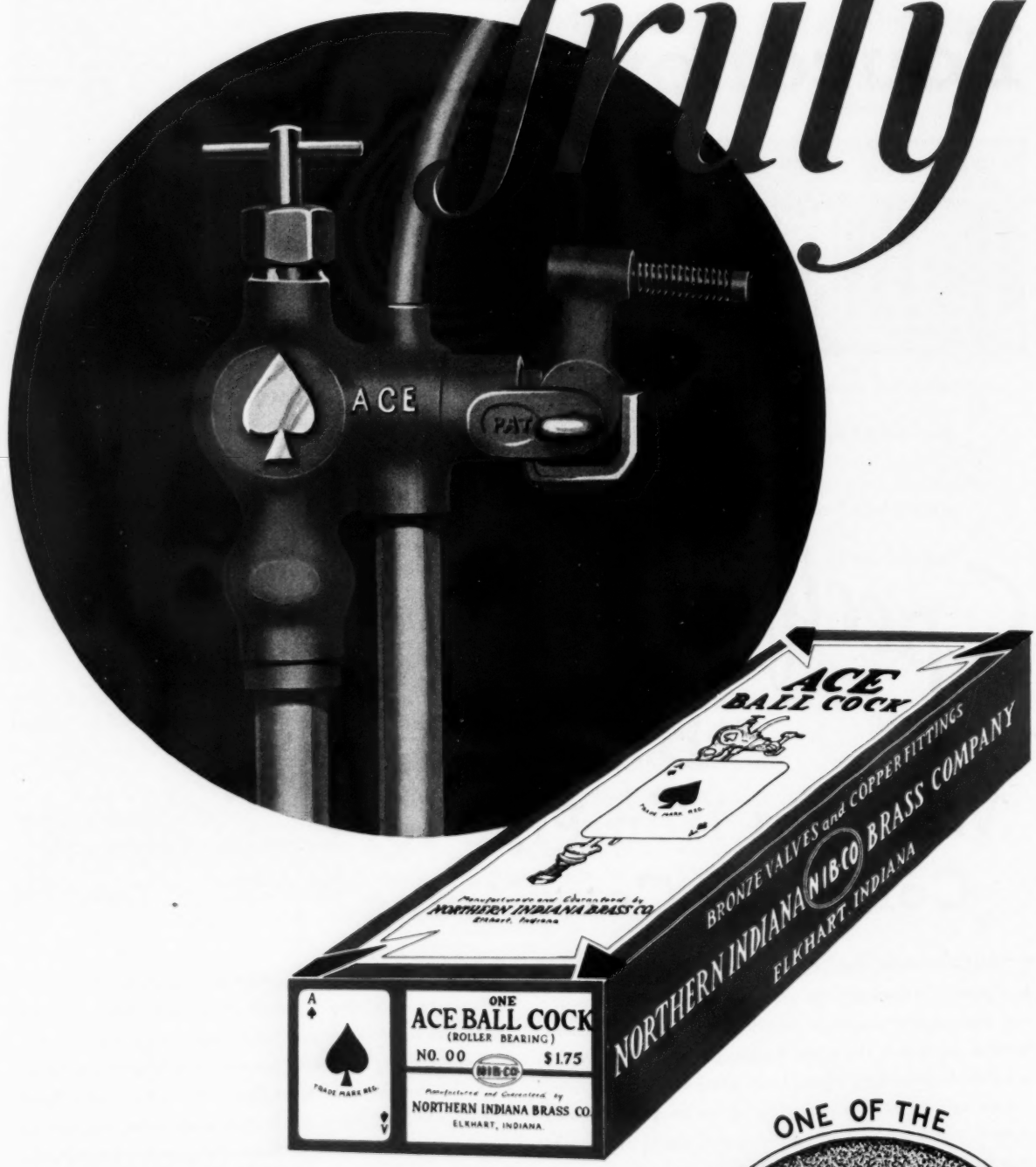
These records, and an analysis of your piping requirements will indicate wrought iron where corrosion is severe. This engineering method of putting the right pipe in the right place is what we call "Byers Pipe Prescription." Let a Byers Engineer tell you more about it, or write to the Engineering Service Department. A. M. Byers Company, Pittsburgh, Pa. Established 1864.

BYERS GENUINE WROUGHT IRON **PRODUCTS**

PIPE · CASING · COUPLINGS · NIPPLES · WELDING FITTINGS · BLOOMS · RIVETS
SPECIAL BENDING PIPE · BAR IRON · TUBING · PLATES · SHEETS · BILLETS · STRUCTURALS

STANDARD of QUALITY for 68 YEARS BYERS 1864 TODAY BETTER THAN EVER

Truly



Cross-sectioned display models of the Ace Ball Cock are now being shown by hundreds of wholesalers.

ONE OF THE
NIB-CO
PRODUCTS

an ACE among Ball Cocks

It's an Ace in the hole to give customers complete satisfaction. This Ace Ball Cock has been designed for just that, in the repair and replacement market. It is the one field in which there is a continuing demand.

Study the features listed below. Get one of these valves for display, or for action in a closet tank. *Buy it* and *sell it* with the Nibco Profit Policy Program.

Six Important Points

1. *Independent Shut-off --- Two Valves in One.*
2. *Spiral Screw Adjustment --- Quiet at All Pressures.*
3. *Steam Bronze Castings --- Every Ball Cock Tested.*
4. *Roller Bearing Action --- Leverage Ratio is Doubled.*
5. *Renewable Chromium Seat --- Monel Metal Bibb Screws.*
6. *Patent Protected and Packaged --- Priced for an Honest Profit.*

NORTHERN INDIANA BRASS CO.

Elkhart, Indiana

EXCESS WEIGHT IS USELESS--

HOW would you like to cast for three pound bass—with a flag pole? Even a flag pole sitter who is familiar with flag poles wouldn't think of such a thing.

Excess weight is useless! Why buy it in unions? Branford Unions are light enough to be easy to handle—light enough to save you money when buying —but plenty heavy enough to handle easily, on any job you want to use them on. The most severe tests yet developed have proven it. Temperature changes, tension and pressure strain . . Branfords will withstand them all.

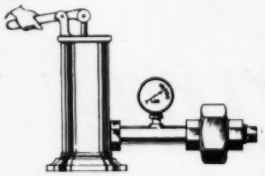
Buy Branfords.

THIS Hydraulic Test also included four other leading brands of unions. Documentary proof of these tests may be had upon written request.

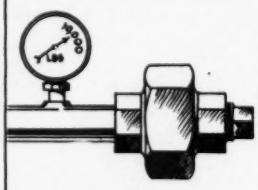
MIF

MALLEABLE IRON FITTINGS CO.
BRANFORD CONNECTICUT

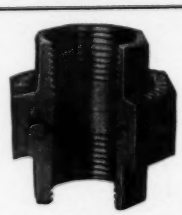
.....M.I.F.....
Presents
BRANFORD Sr. & Jr.
UNIONS
in
A HYDRAULIC TEST
Directed by
Prof. James Holt
Mass.Inst. Tech.



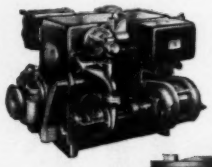
THIS VIEW SHOWS A BRANFORD UNION ON THE HYDRAULIC TESTING MACHINE



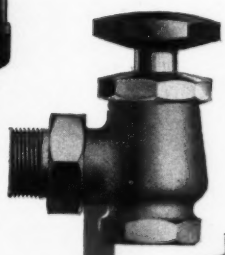
10,000 LBS. WERE HELD WITHOUT LEAKAGE

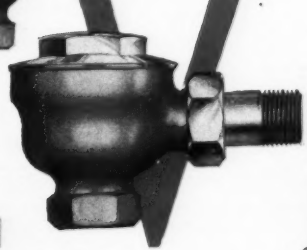


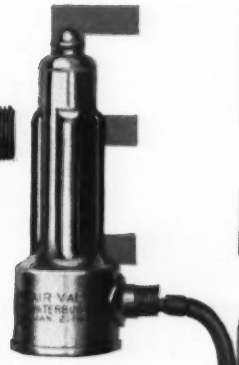
TRY ONE ON YOUR NEXT JOB



HOFFMAN *now offers the* MOST COMPLETE LINE *of* STEAM HEATING SPECIALTIES







VALVES TRAPS PUMPS

In response to repeated demands for Hoffman quality and performance over a wider range of heating specialties, Hoffman has added many new items to its line of fine products. Today Hoffman offers a complete source of supply with undivided responsibility . . . valves, traps and pumps for every type of steam heating system. By specifying Hoffman Specialties throughout, Architects and Heating Contractors can now assure to every steam heating job the satisfactory operation that has always been a part of the Hoffman guarantee. Write for new bulletins.

HOFFMAN SPECIALTY COMPANY, Inc., Dept. RX-86, Waterbury, Conn.

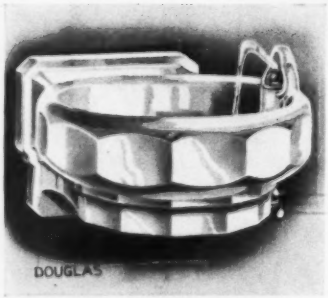
Cut your share to suit *yourself!*

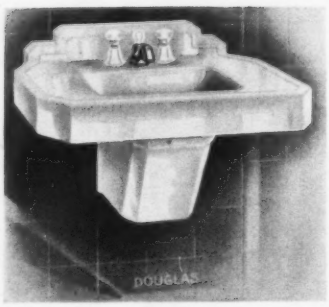
ESTABLISH your own profit to meet conditions as you face them! That is the backbone of The John Douglas Company sales policy, from the manufacturer direct to the plumbing contractor, with a scale of profit established by the master plumber.

The John Douglas Company does not admit of the logic of manufacturers publishing established resale prices to the consumer that do not allow adequate profits.

Forty-five years ago, with the inception of The John Douglas Company, its founders conceived this direct-to-the-contractor sales policy. Forty-five years of unflinching adherence to this policy have proved to its founders its stability.

To you interested in Government work, The John Douglas Company has enjoyed a national reputation in this type of work for many years and maintain an office in Washington, D. C., at 821 Union Trust Building.





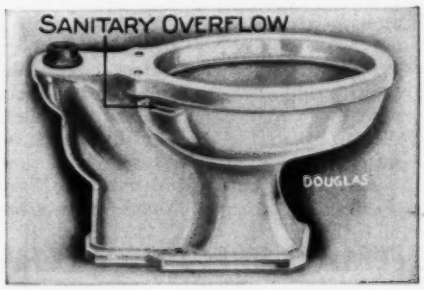
THE JOHN DOUGLAS COMPANY

Manufacturers of Plumbing Fixtures

CINCINNATI OHIO

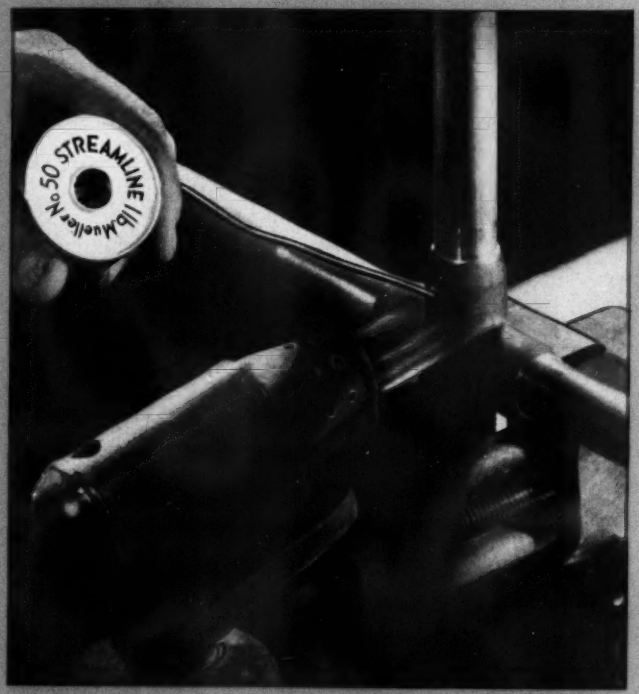
DOUGLAS BOWL
with
Sanitary Overflow

Always a margin of safety. There is no cross connection and can be no back syphonage.



STREAMLINE

cut ... ream ... clean ... flux .... torch!



Feed the solder through the feed hole only. In no other way can you be absolutely sure by visual inspection that a perfect leak-proof bond has been accomplished. This is a feature which no other connection possesses.

A HACK saw, a file, a piece of sandcloth, a blow-torch, a can of STREAMLINE soldering flux and a spool of STREAMLINE solder wire are all that are required for an installation of STREAMLINE hard copper pipe and fittings—five simple operations. Gone are the back-breaking days of threading pipe. Science now takes the place of sweat. Mueller makes it possible for the journeyman to be again the craftsman of the soldered joint. A journeyman's skill, a few drops of solder and a law of nature now combine to make the tightest joint known to the trade.

The connection between Mueller STREAMLINE hard copper pipe and Mueller STREAMLINE fittings is positively leakproof. Expansion will not work it loose nor will vibration affect it. This Mueller patented joint is stronger than the pipe itself.

STREAMLINE—time-tested and proven—has three years of public acceptance—and the confidence of the trade. Thousands of installations throughout the country are a testimony of its outstanding merit.

ASSURANCE OF A LEAK-PROOF CONNECTION BY VISUAL INSPECTION IS AN EXCLUSIVE FEATURE OF THE MUELLER PATENTED JOINT

The Mueller STREAMLINE Fitting *alone* has the valuable visual inspection feature by which the plumber can tell at a glance, without an actual pressure test, that he has made a perfectly bonded leak-proof connection. The method of feeding the solder *into* the fitting is exclusive with the STREAMLINE Fitting. This method insures a thorough distribution of the solder. There is no guess work about it—when the fitting and pipe have been cleaned and fluxed, and the solder fed into the fitting through the feed hole, nature's law, capillarity, inevitably works, sure and certain as the law of gravitation itself, and causes the solder to flow evenly in all directions. Consequently, its appearance as a white ring at the end of the fitting is your visual evidence of a leak-proof joint.

Patent 1,770,852
Patent 1,776,502
Other Patents Pending

Patent 1,770,852
Patent 1,776,502
Other Patents Pending

Patent 1,770,852
Patent 1,776,502
Other Patents Pending

Patent 1,770,852
Patent 1,776,502
Other Patents Pending

Patent 1,770,852
Patent 1,776,502
Other Patents Pending

Patent 1,770,852
Patent 1,776,502
Other Patents Pending

STREAMLINE Fittings are manufactured in Canada by the Canada Wire and Cable Co., Ltd., Leaside, Ontario.

Mueller Brass Co.

PORT HURON, MICHIGAN

The RCA building

one of 12 units in Rockefeller Center being equipped with

85*

RED-BRASS PIPE

Measured by floor area, the new RCA Building will be the largest building in the world. Its 70 stories will tower 853 feet above the sidewalks of New York.

Architects: Reinhard & Hofmeister; Corbett, Harrison & MacMurray; Hood & Fouilhoux. General Contractor: Hegeman-Harris Co. Plumbing Contractor: James C. McCullagh, Inc.

IN THIS monumental structure and in the other 11 units of Rockefeller Center..."the greatest private development in America"... Anaconda Brass Pipe is being used exclusively. More that 600,000 lbs. of 85 Red-Brass Pipe has been required to date. What more can we say about the quality of Anaconda Brass Pipe, than that it meets every requirement of Rockefeller Center?

*Trade-mark "85" Reg. U. S. Pat. Off.

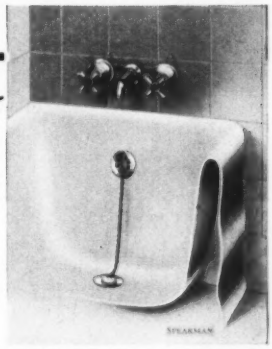
ANACONDA
from mine to consumer

THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
Offices and Agencies in Principal Cities

ANACONDA BRASS PIPE

K-3395—SPEAKMAN AnystreamSelf-Cleaning Shower Head. Pat. Jan. 2, 1923 and Nov. 3, 1931.

ANY PLUMBER WHO INSTALLS *CHEAP* SHOWERS AND FIXTURES IS STORING UP TROUBLE FOR HIMSELF LATER ON



K-4565—SPEAKMAN Dupont Tub Filler.

K-2601-M—SPEAKMAN Built-in Mixometer Shower. Size ½ inch. Mixometer with metal wall plate and metal handle. Bent arm with heavy metal wall flange and K-3395 Anystream Self-Cleaning Head.

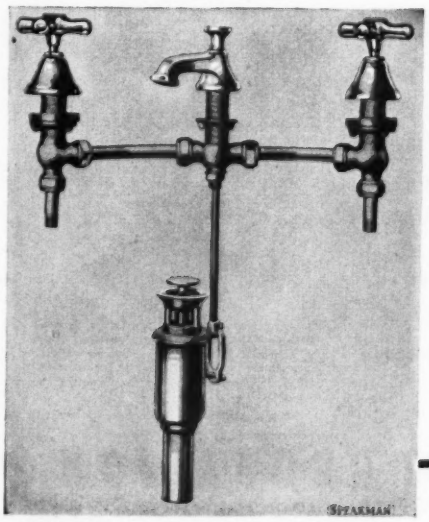
FOR your own protection, and for the continued satisfaction of your customers who might desire you to install "inexpensive" fixtures, take the time to point out that Speakman Showers and Fixtures are made of good heavy brass; that threads are cleanly cut; seats are easily renewable; washers are on swivel discs; therefore cannot spread out; also that they cease to rotate when they come in contact with the seat. This saves wear on both seat and washer. Mention also the fine finish in sparkling, never-tarnishing Chromium plate.

K-4656—SPEAKMAN Act-Easy Pop-up Bath Waste.

K-5503-M—SPEAKMAN Grace-Line Sink Fixture. (Design Patented)

Your customers will be glad of your interest when you point out the difference between cheap fixtures and products bearing the name SPEAKMAN, which has stood for quality for 64 years.

Literature on Speakman Showers and Fixtures is available for you to send to your customers—of course imprinted with your name and address.



K-5010—SPEAKMAN Metaline Unit-Acto Lavatory Fixture.

SPEAKMAN COMPANY
WILMINGTON, DELAWARE

SPEAKMAN
SHOWERS & FIXTURES

THESE ADS ARE YOURS, AS WELL AS OURS

. FORTUNE .

57,000 people subscribe to this ten-dollar-a-year deluxe publication. Its high cost automatically selects people with means to buy—its high standing gives prestige to any products advertised within its covers.

. TIME .

A miracle of the magazine world—crammed with readable news, received weekly and read from cover to cover by 402,000 well-to-do families who are interested in modern equipment for their homes.

HOUSE & GARDEN

A bible to all prospective builders of fine residences. Read, for suggestions and ideas, by 118,000 people interested in homes, and in all that pertains to them.

We believe that depressions are ended, not by waiting, but by working.

The aggressive advertising campaign, shown in part above, is concrete evidence of our convictions.

Appearing in magazines of national circulation—read by groups of people who can buy today and buy more tomorrow—these advertisements reach not only your best present prospects, but also your finest prospects for the future.

These advertisements are yours as well as ours—for every National Product sold means a job and a profit for some heating contractor.

HOUSE BEAUTIFUL

Another home magazine. A large proportion of its 105,000 readers are either planning to build, or are building . . . and so are real, live prospects for heating systems.

ARCHITECTURAL FORUM

Subscribed to by 6300 people, of whom 4000 are architects and engineers. Its readers are men interested in everything connected with building and remodelling.

ARCHITECTURAL RECORD

10,000 subscribers, of whom 6000 are architects and engineers. Familiarizing these men with the advantages of modern heating equipment, we win a larger share of the total appropriation for the heating contract.

NATIONAL RADIATOR CORPORATION

JOHNSTOWN - PENNSYLVANIA

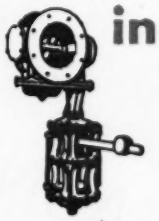
Only 6 elements to CONTROL ANY STEAM HEATING SYSTEM

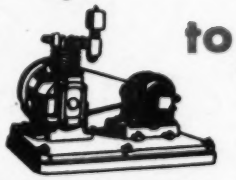
This **in each radiator** provides *equalized* and *balanced* distribution of steam throughout the system so that all radiators get heat at the same time and in substantially the same proportion regardless of distance from the boiler.

This **in each branch main**
The exclusive Webster compound orifice method (patented) which proportions the steam for various sections of the system.

This **outdoors** automatically throttles the Main Control Valve so that it delivers sufficient steam for comfortable room temperatures as dictated by the prevailing outdoor air temperature.

This **in Superintendent's office,** operating engineers room, or by PBX operator's switchboard, provides manual adjustment of steam from half to double normal requirements to meet unusual demands

This  **in main serving all direct radiation** and recirculating units, regulates automatically the steam required to maintain comfortable room temperature under all conditions of weather.

This  **to supply power** to operate the entire control system.

A book describing Webster Moderator Control will be sent you upon request.
WARREN WEBSTER & COMPANY, Camden, New Jersey
Pioneers of the Vacuum System of Steam Heating

UNIQUE in Comfort, Economy, and Simplicity, Webster Moderator Control continues to gain approval of architects, engineers and building owners. Following is a partial list of new and modernized installations—many in operation from one to five years:

Balto. City Hosp., Balto., Md.
Hutzler Bros. Store, Balto., Md.
Park Bank Bldg., Balto., Md.
St. Joseph's Convent, Campbellsport, Wisc.
Commonwealth Edison Service Bldg., Chicago, Ill.
Staley Administration Bldg., Decatur, Ill.
Hershey Hotel, Hershey, Pa.
Mech. Eng. Bldg. No. 2, Purdue Univ., Lafayette, Indiana
State Off. Bldg., Lansing, Mich.
Golden Rule Dept. Store, Minneapolis, Minn.
L. S. Donaldson Co.'s Store, Minneapolis, Minn.
Nurses Home, Univ. of Minn. Hospital, Minneapolis, Minn.
Hotel Dieu Hospital, Montreal
Holland-Plaza Building, N. Y.
Squibb Bldg., New York, N. Y.
1616 Walnut St., Phila., Pa.
Episcopal Hospital, Phila., Pa.
Integrity Building, Phila., Pa.
Missouri-Pacific Bldg., St. Louis, Mo.
Northern States Power Co. Off Bldg., St. Paul, Minn

WEBSTER MODERATOR CONTROL
"Control by the weather"

a C-10

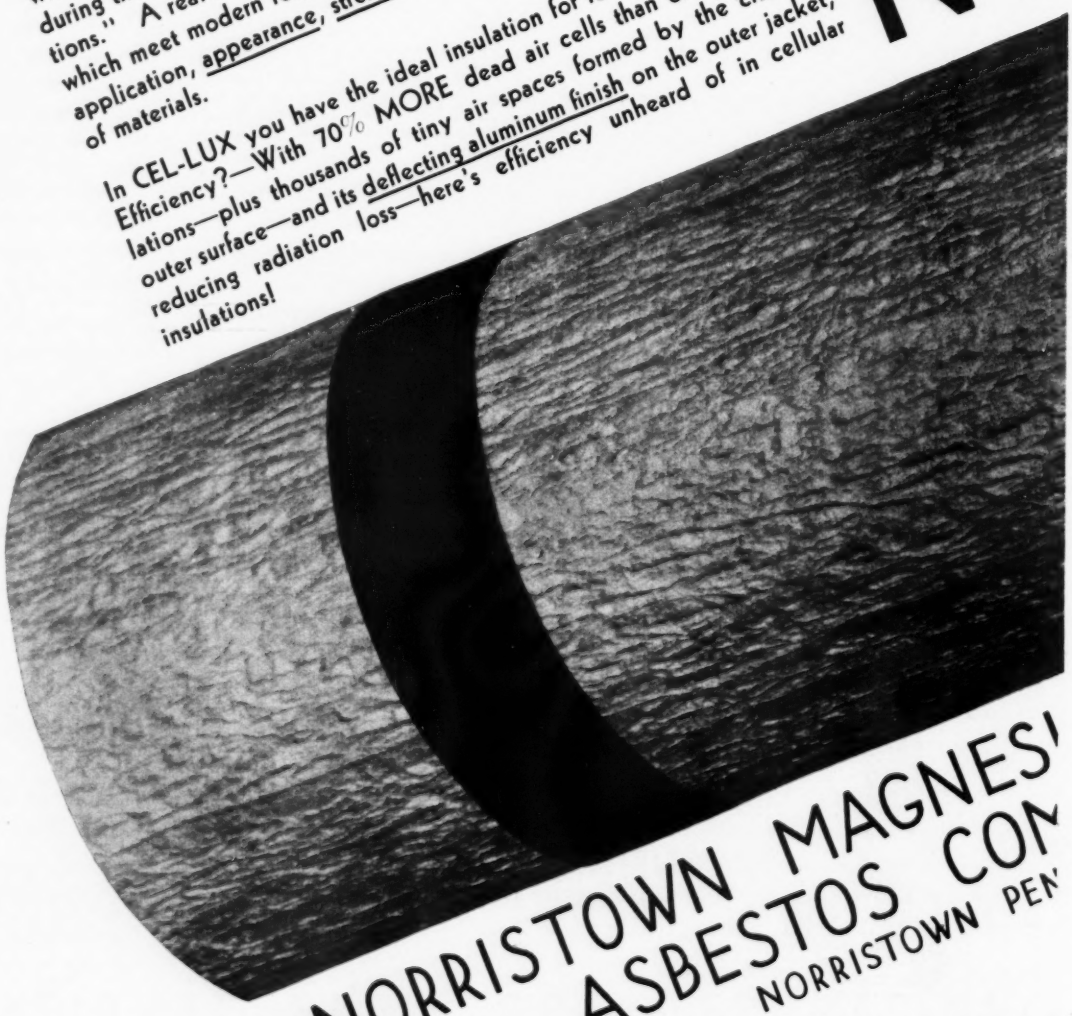
= CEL-LUX =

The NEW-TYPE Insulating Jacket for Pipes.

Nearly every type of heating appliance and heating accessory has undergone a series of radical changes during the past decade, during which time pipe and boiler insulations have remained much the same with the exception of a few improvements sponsored by Norristown during the last two years in their campaign on "Modernized Insulations." A real need exists to-day for additional types of insulations which meet modern requirements as to efficiency, low labor cost of application, appearance, strength, length of service, and finally cost of materials.

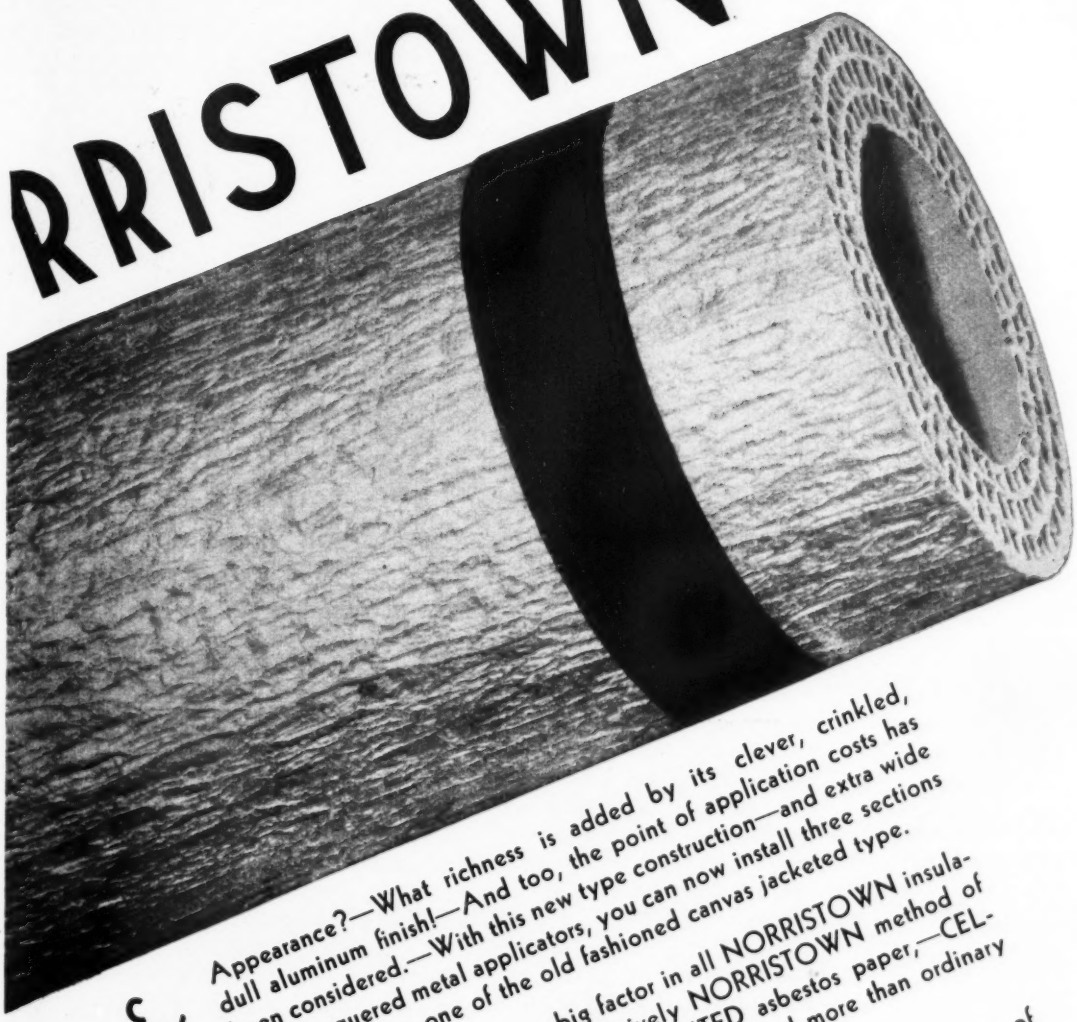
In CEL-LUX you have the ideal insulation for low pressure work.—Efficiency?—With 70% MORE dead air cells than ordinary insulations—plus thousands of tiny air spaces formed by the crinkled outer surface—and its deflecting aluminum finish on the outer jacket, reducing radiation loss—here's efficiency unheard of in cellular insulations!

by NO



NORRISTOWN MAGNES
ASBESTOS COM
NORRISTOWN PEN

RRISTOWN



IA &
IPANY
INSYLVANIA

Appearance?—What richness is added by its clever, crinkled, dull aluminum finish!—And too, the point of application costs has been considered.—With this new type construction—and extra wide black lacquered metal applicators, you can now install three sections of CEL-LUX to one of the old fashioned canvas jacketed type.

Strength has always been a big factor in all NORRISTOWN insulations.—With the new and exclusively NORRISTOWN method of corrugating,—and the special PATENTED asbestos paper,—CEL-LUX has the strength and rigidity to withstand more than ordinary handling.

Such meticulous care has been taken to eliminate every factor of deterioration—that we'll venture to say, the insulating life of CEL-LUX under every day conditions can not be calculated within the span of human life!

With all this,—CEL-LUX comes to you with a "1933" price tag.—It's made to meet present day demands in every respect! A request on your letterhead will bring a descriptive booklet—FREE.

The "third degree"

that every Kennedy valve must endure

KENNEDY
Fittings, too

Complete lines of black and galvanized malleable iron screwed fittings, brass or bronze screwed fittings and standard cast-iron flanged fittings and flanges are also included among the large list of Kennedy Products—an additional advantage of standardizing on Kennedy.

WHEN the Kennedy Tester finishes with a valve he knows - - - and knows definitely - - - whether or not it is perfect in every respect. His cross examination is thorough and relentless. It covers every detail of the valve from hex threads or flange faces to handwheel and is sure to uncover any flaw that may exist in metal, joints or mechanism. His sole job is to detect imperfections and he is entirely independent of the Production Department. That is why you can be sure that every Kennedy Valve has actually proven that it will withstand far more than its rated pressure, will seat tightly, release promptly, and operate dependably.

Whether you purchase a Kennedy Gate, Globe, Angle or Check Valve, of bronze or iron body, and for standard, medium or high pressure service, you have the same security of generous safety factor in design, high grade metal in every part, and effective and time-proven operating mechanism.

Kennedy Valves and Pipe Fittings can be obtained from your local supply house. If you will write for a copy of the Kennedy catalog, we shall be glad to tell you where you can obtain Kennedy Products in your locality.

The Kennedy Valve Mfg. Co., Elmira, N. Y.
Branches and Warehouses in Principal Cities

KENNEDY

VALVES-PIPE FITTINGS-FIRE HYDRANTS

Guard Your Reputation . . .

By Picking the RIGHT *Pipe for the* RIGHT *Job*

YOU may not be able to make your installation 100% Reading Puddled Iron Pipe—but you'll protect your reputation and assure generations of trouble-free pipe service if you insist on using Reading Pipe for the lines described on this page.

In these lines, there is no substitute for the longer life of Reading Puddled Iron. This has been proved by hundreds of thousands of installations, extending over a period of actual service that is longer than that of any other kind of pipe. No other pipe will do here what Reading does so well.

Reading makes Puddled Iron out of time-tested materials, in the time-tested way. You get PROVED pipe endurance for specific uses when you install Reading.

For Steam Return Lines

The severe corrosive conditions present in steam return lines call for Standard Reading Puddled Iron Pipe. Reading Puddled Iron is a physical compound of practically pure iron base metal, containing hundreds of thousands of filaments of protective silicate. This unique composition gives *double* protection from rust.

For Drains

Alternating wet and dry conditions often mean swift death for most kinds of pipe. Reading Galvanized Standard Puddled Iron Pipe is especially adapted to give long service under such conditions. For underground drains, Reading Galvanized Extra Heavy Puddled Iron Pipe is recommended.

For Underground Service Connections

In acid or alkaline soils, Galvanized Extra Heavy Reading Puddled Iron Pipe pays for itself many times over in freedom from repair and replacement costs. Under electrolytic action—the destroyer of all metals—Reading Pipe is *least* affected.

For Vents

When exposed to atmospheric corrosion, Reading Puddled Iron Pipe forms *two* hard, impervious films of oxide which effectively prevent destructive pitting and penetration of rust. Corrosion is actually *stifled.*

READING
PUDDLED IRON
SINCE 1848

READING IRON COMPANY
PHILADELPHIA

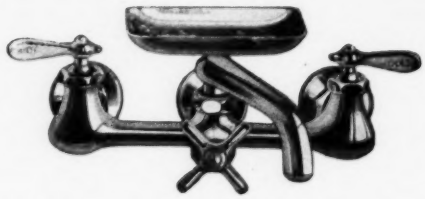
Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Iron

CHICAGO FAUCET NEWS

Issued Monthly by The Chicago Faucet Co., 2700-22 N. Crawford Ave., Chicago, Ill., Vol. 1, No. 3

NEW STYLE CLASSIC FAUCETS

No. 444



No. 561

SUITED TO HIGH OR LOW BACK SINKS

New styles in Classic Sink Faucets reflect a lowering of the soap dish line and a raising of the spout. Thus the dish is kept below the top of the sink back and the spout is high enough to fill deep vessels.

ALL METAL FIXTURES GAIN IN FAVOR

There has been a marked tendency toward the use of all metal trim on sink faucets. This is logical because of the elimination of breakage with its attendant annoyance. A few years ago it would have been out of the question, but chromium plating has changed all that.

RENEWABLE UNIT INSURES LONG, SATISFACTORY SERVICE

As in all previous Classics, the working parts of these new models are embodied in a working unit which is as easily changed as an electric light bulb. Monel metal is used for the seats—sheet monel metal, which is tougher and more resistant due to the process of its manufacture. There is no wear on the body of the faucet.

SAME ADJUSTABILITY THAT MADE CLASSICS FAMOUS

The same adjustable supply arms (for varying centers and angles of nipples) that made the Classic famous with the trade, are used in this latest No. 444 model. From 4" to 8½" is the spread of the standard fixture. Special arms are available to make 10" and 12" centers. Other arms are made with integral stops. Still others have male shanks with adjustable flanges. One special arm is made with a filter connection.

STREAMLINE MODE IN NEW THREE-WATER FIXTURE

Grace and beauty distinguish this new No. 561 sink fixture for three waters, in a field where utility, rather than beauty, has sometimes been the main concern. Low soap dish and overhead spout make this faucet suitable for low back or high back enameled sink, sheet metal or tiled-back sink.

DISPLAY STANDS AVAILABLE WITH FAUCETS ORDERED NOW

With the first of these new style Classics, attractive display stands will be furnished free. Nothing brings people into your store like a good window display. Literature featuring both the No. 444 and the No. 561, without prices, is ready for distribution. Samples and reasonable quantities will be sent on request.

MANY PLUMBERS REQUEST WORLD'S FAIR BOOKLET

From all parts of the country have come requests for the 32-page booklet of pictures of "A Century of Progress." The supply is limited. The Chicago Faucet Company will mail a copy FREE to master plumbers who request it on their business letterheads.

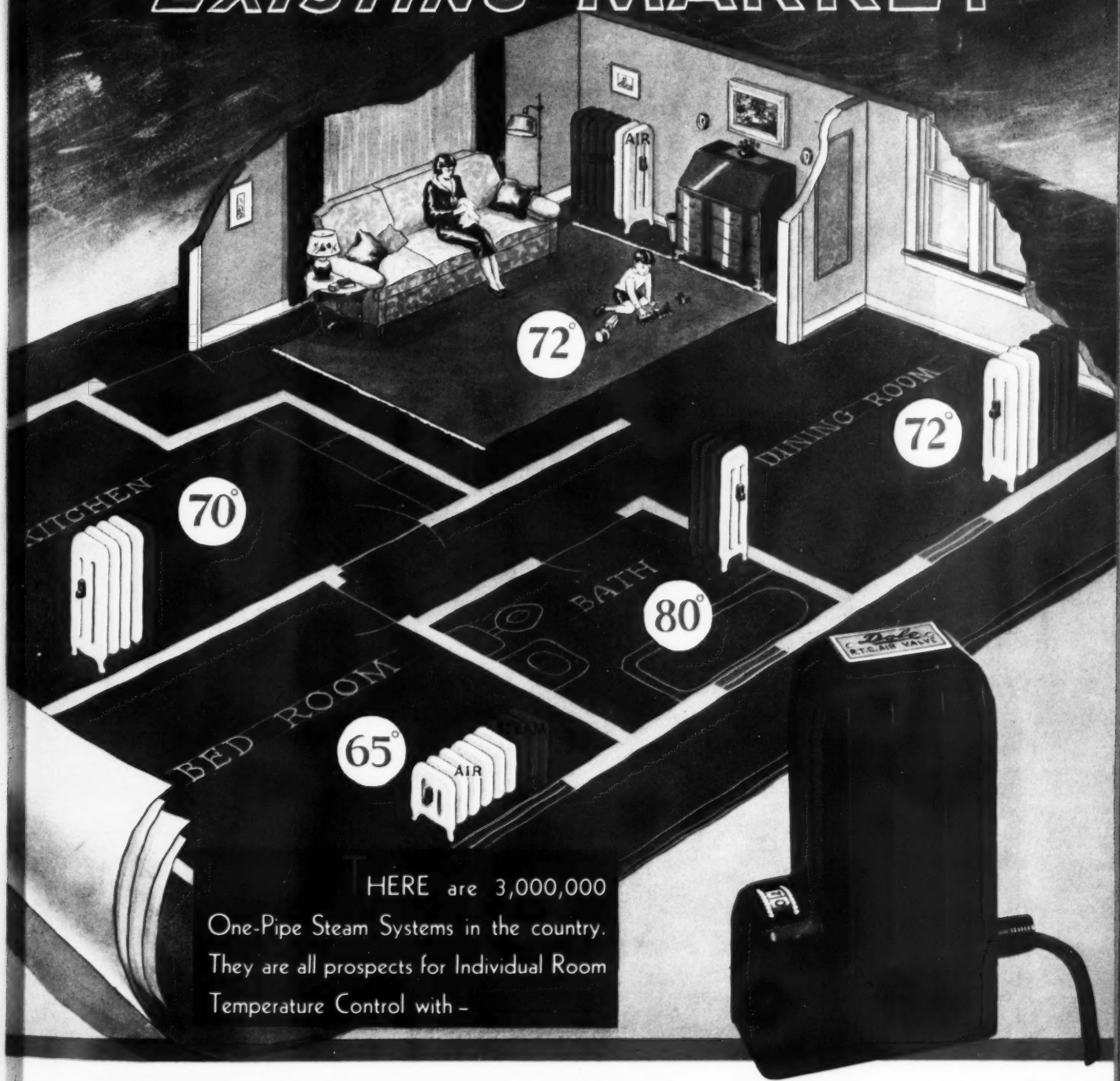
TEN MILLION MAPS TO GUIDE TOURISTS TO WORLD'S FAIR

Ten million official Century of Progress Exposition highway maps and tourist guides showing the best routes to the Fair this year, will be distributed to motorists of the United States.

The maps, which will be distributed by oil companies through service stations over the country and by motor clubs, will contain complete directions on how to reach the Exposition grounds from points within 400 miles of Chicago.

While Construction Lags . . .

SELL THE GREAT *EXISTING* MARKET



THERE are 3,000,000 One-Pipe Steam Systems in the country. They are all prospects for Individual Room Temperature Control with –

DOLE R.T.C. AIR VALVES

ROOM TEMPERATURE CONTROL

OVER →

EQUALIZATION, At Last, for One-pipe Steam Systems—

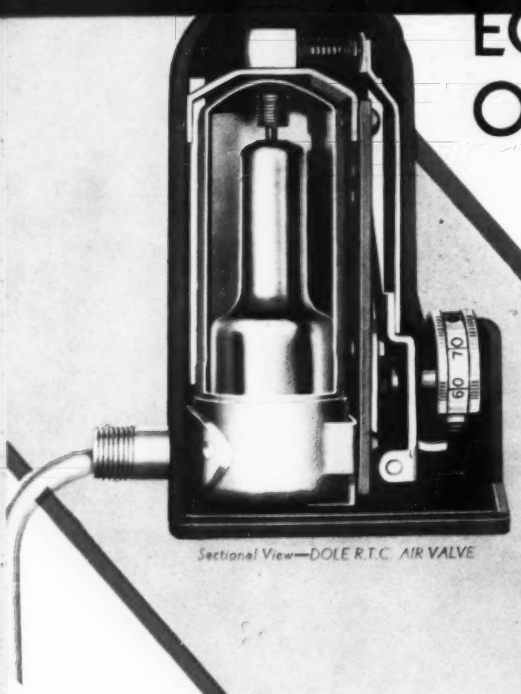
A POWERFUL SELLING ARGUMENT FOR YOU

MOST people dependent on one-pipe steam pay too much for too little comfort. They want to hear about any means to bring them **more** comfort for less money. The very reason you are in business is to bring them the economy and satisfaction assured by DOLE R.T.C. AIR VALVES.

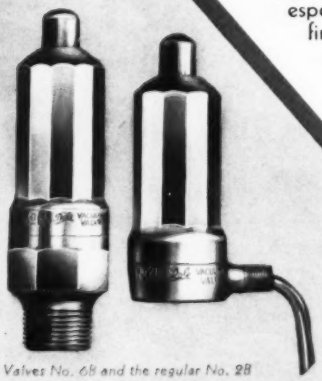
Here is a means of checking waste heat at over-supplied radiators and diverting it to starved radiators in another part of the system. EQUALIZATION on a one-pipe steam system! And with INDIVIDUAL ROOM TEMPERATURE CONTROL at only $6 list, this pushes one-pipe steam into a new position of leadership.

Engineers—You will find the DOLE R.T.C. AIR VALVES especially efficient when used in connection with automatic firing. In many cases the defects of a wasteful installation, now revealed in operation, can be minimized. You can apply the principle on which the DOLE R.T.C. AIR VALVE is based as a remedy, or as a great improvement for specification on new construction. One-pipe steam with this control now actually offers more than any other system in the economy and automatic adjustability to the comfort level, room by room. (60°-80° F.)

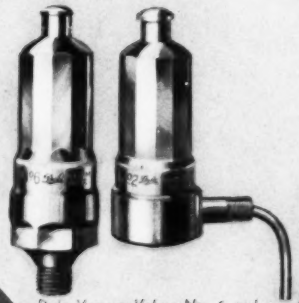
Steamfitters and Heating Contractors—Scores of incidental sales on your regular calls can be made by offering the solid comfort of controlled room temperature—self-regulating—neither too hot nor too cold. See that journeymen carry one or two and you'll be surprised at the number of $6, $12 and $18 orders that can be picked up from people who want to be comfortable. You will discover that it pays to go out with this item alone and call on apartment owners to show them how their tenants may be better pleased while the owners' heating cost is being reduced.



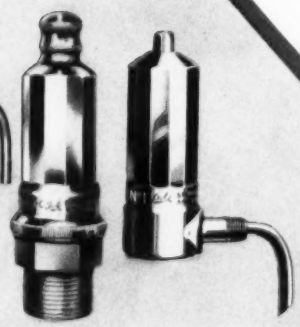
Sectional View—DOLE R.T.C. AIR VALVE



Dole Vacuum Valves No. 6B and the regular No. 2B



Dole Vacuum Valves No. 6 and the regular No. 2



Dole Quick-Vent Air Valve No. 3C and the regular Dole Syphon Air Valve No. 1

Dole 1933 Straight Shank Air Valve and the regular Dole 1933 Air Valve

Jobbers—Stock and sell this item which fits today's conditions, requiring neither a big investment nor a complicated range of styles. More of your customers are hearing about the DOLE R.T.C. AIR VALVE every day and you will scarcely over-estimate your initial requirement. Whether you start with a few dozen or a gross, at least be prepared and capitalize on the money-making possibilites of the DOLE R.T.C. AIR VALVE—and the eight regular air and vacuum valves in the short and wide range DOLE line.

Engineers — Steamfitters — Contractors — Jobbers! — Action, of course, is the first step to better business. Act on this suggestion: Use the coupon below to tell us you want to know the details. There is room on it to write an informal order if you want to start at once.

THE DOLE VALVE COMPANY

1913-33 Carroll Ave., Chicago, Ill.

Notice the eight DOLE SYPHON AIR VALVES and VACUUM VALVES shown here. This line at **new low prices** is a complete answer to every air and vacuum valve need. It covers the field, eliminates duplication in stocks, and you realize an extra profit on the economy of handling one complete line.

DOLE VALVES

DOLE R.T.C. AIR VALVES : DOLE SYPHON AIR VALVES NO. 1 : DOLE VACUUM VALVES NO. 2B

THE DOLE VALVE COMPANY, 1913 Carroll Ave., Chicago, Ill.

PRINTED IN

Tell me the details, please, about the DOLE R.T.C. AIR VALVE (including prices.) My classification is ☐ Jobber, ☐ Steamfitter.

☐ Also, rush me the up-to-the-minute story on the regular Dole Syphon Air and Vacuum Valve Line.

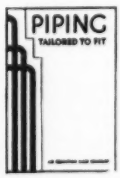
Name..... Firm Name.....

St. & No. City

A Quarter of a Century of Progress

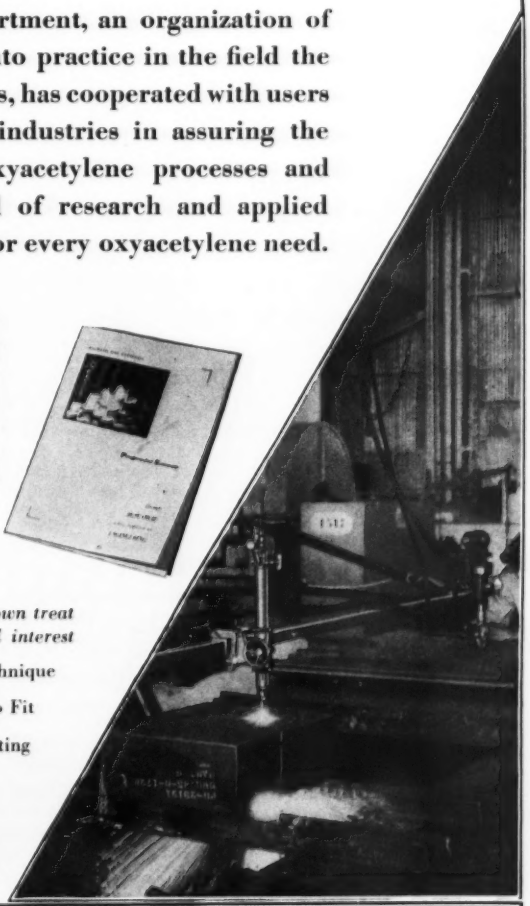
For a quarter of a century Airco-Davis-Bournonville Research Laboratories have pioneered in the development of new apparatus, new processes and new techniques that have met and satisfied the requirements of a wide range of welding and cutting applications.

Airco Applied Engineering Department, an organization of national scope trained in putting into practice in the field the findings of the Research Laboratories, has cooperated with users of the process thruout the metal industries in assuring the successful application of Airco oxyacetylene processes and equipment. From this background of research and applied engineering Airco offers a product for every oxyacetylene need.



The three booklets shown treat on subjects of special interest

A new Welding Technique
(for pipe lines)
Piping Tailored to Fit
(for pipe work)
Machine Gas Cutting



AIR REDUCTION SALES COMPANY

60 E. 42nd Street, New York

Airco Oxygen—Airco Acetylene—Supplies—National Carbide OFFICES *Airco—Davis—Bournonville Welding and Cutting Apparatus*

Baltimore	Buffalo	Cleveland	Kansas City, Mo.	Minneapolis	Pittsburgh	Seattle
Bettendorf, Ia.	Charlotte	Dayton	Los Angeles	New Orleans	Portland, Ore.	Shreveport, La.
Birmingham	Chicago	Detroit	Louisville	Oklahoma City	Richmond	St. Louis
Boston	Cincinnati	Jersey City	Milwaukee	Philadelphia	San Francisco	Wheeling

Represented in Texas by Magnolia Airco Gas Products Co., Houston, Beaumont, Wichita Falls, El Paso, Fort Worth and San Antonio; in Canada by Railway & Engineering Specialties Ltd., Montreal, Can.

A NATION-WIDE WELDING SUPPLY SERVICE

BETWEEN OURSELVES

Eyeing the Future

TURNING over a new leaf is offered as good advice in a moral way. And by tradition, turning over the Jan. 1 leaf of the calendar has acquired a business significance. This year, in particular, with nearly everyone glad to see 1932 pass into history, the advent of the new year finds all of us eyeing the future and aware of the advantage of forgetting the past. Memories of the "good old days" are pleasant but if they color our decisions today, these memories may play havoc.

A Practical Need

AN editor frequently has felt that the New Year was the time for prophesying. It is significant of our changed viewpoint that so little has been published in the past few weeks telling all of us what representative leaders saw ahead. Economic predictions are at a big discount. We felt the same way about them that you do, so we have adopted this opening issue of 1933 to today's conditions—not yesterday's traditions.

Finding the Facts

FOR some months we have been in touch with readers, trying to learn more of their plans for 1933. All of us know that some contractors and dealers are doing a better job than others. We were anxious to forget prophecy and bring you concrete facts. Not all the people we talked to were planning ahead. Some—like many business men—were waiting for the national election. But here and there we found what we wanted.

What One Man Does

TAKE the leading article as an example of how this business paper tries to serve its readers with practical helps. In it, a successful contractor-dealer tells you just how he has been getting modernization business. It is different from his previous line of work, its selling problems differ and its engineering features vary from his old routine. But it is keeping him busy today.

Uses 1932 Experiences

ON the basis of his 1932 experiences, this contractor is planning his 1933 program. His experiences, as you will learn, show the necessity for greater care in craftsmanship and closer attention to the buyer's needs as essentials in modernization work. We offer you this story with the feeling that it is the kind of definite service which you want as you plan to use 1933 as a year of opportunity for improving your own business.

A "Yes-Man" on a Vacation

FAR back in the magazine each month is our "Pipe Line" column. Our "colyumnist" will tell you next month what a "yes-man" does on a vacation. It will give you a laugh as it did us. But if you feel like indulging in a little philosophy, it is worth recalling that when business is under discussion today, too many of us are willing to say "yes" to the pessimist.

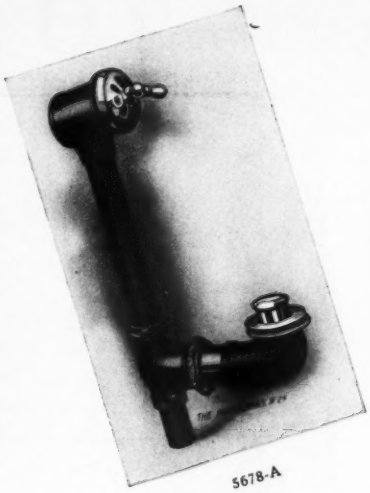
Serving Your Needs

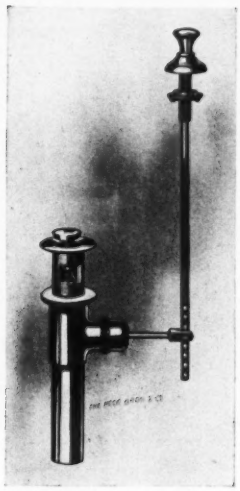
THROUGHOUT this issue, we have been able to assemble a variety of interesting articles typical of the many services in which our readers engage. Thawing pipes, co-operation with utilities, plumbing problems in institutional kitchens, panel heating by electricity, working out a special form of home air conditioning, using sales helps more effectively, untying some knotty engineering problems, taking care of enamelware, applying an oil burner code—these are some of the selections which carry both interest and significance to the alert contractor-dealer who reads DOMESTIC ENGINEERING.

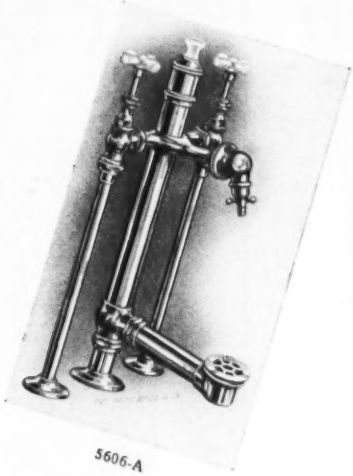
Ready for the New Year

WE plan on following our own advice. While telling our readers of the necessity of better planning and better organization to meet 1933 conditions, we are doing our best to adapt our editorial pages to the same need.

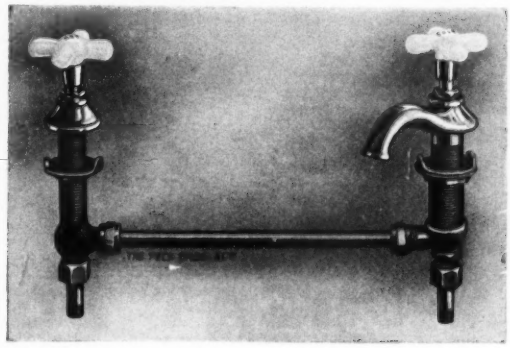
Your Editor

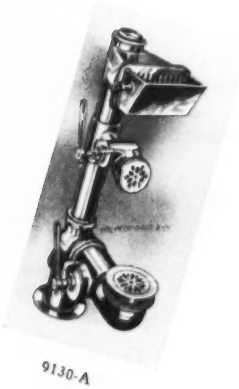

5678-A


5471-A

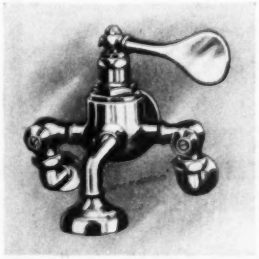

5606-A

9467-A


5075A


9130-A

A Complete Quality Line of Plumbers' Brass


9500-A

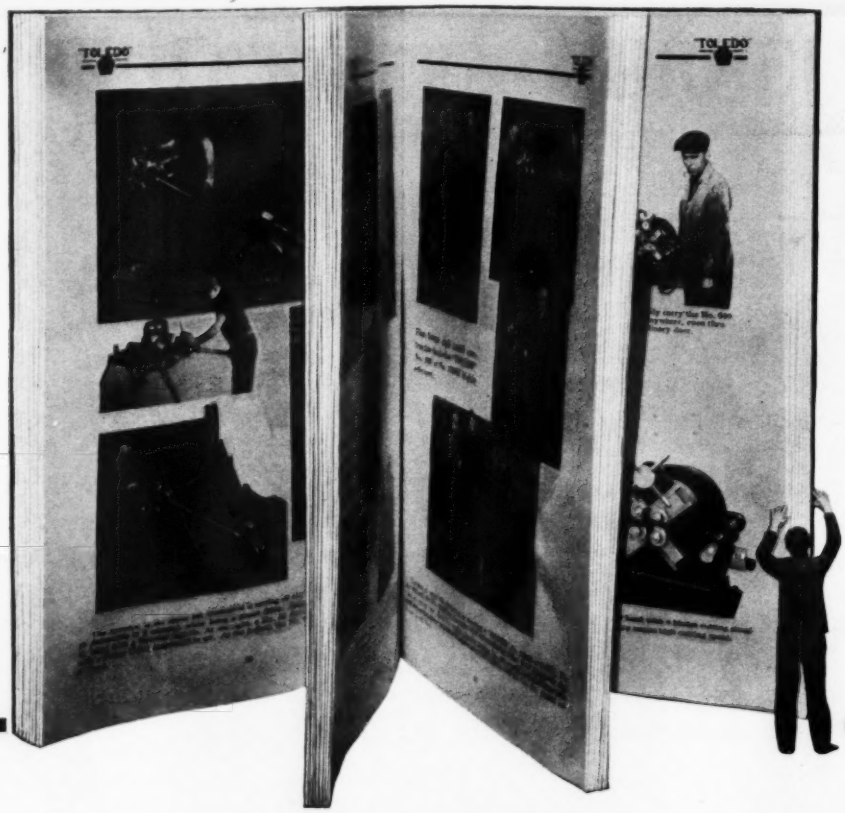
Illustrated on this page are just a few of the high quality plumbers' brass items we manufacture. There are many others, a complete line in fact, and all of them are made to the same standards. No matter what your requirements, we can fill them. You can buy all of your brass goods from one source—Peck Brothers—and be sure of one high quality and one responsibility.
Write for full information, now.

Peck's Better Brass Builds Better Business

5380-A

THE PECK BROS. & COMPANY

127 CHESTNUT STREET NEW HAVEN, CONN.



IT'S A GREAT BOOK—

The new "TOLEDO" 1933 catalog is now ready—the finest, most complete book on pipe tools and pipe machines that has ever been published. Hand pipe tools to meet every demand from 1/8" to 12"—reamers—work benches—pipe vises—and power machines up to 4". Portable machines and high speed production machines that will easily produce 70 pieces of sketch work in an 8-hour day.

This new "TOLEDO" catalog shows the most modern equipment known today for installing piping systems most economically and satisfactorily. If you desire your copy of this catalog—

I am interested in reducing job costs and increasing profits. Please send me a copy of the new "Toledo" catalog.

Name .....

Street .....

City .....

State .....

Mail Coupon to

THE TOLEDO PIPE THREADING MACHINE CO.

Toledo, Ohio

New York Office:
72 Lafayette Street

OUR INDUSTRY

Plan for 1933 Profit

A MANUFACTURER was talking the other day in the usual way, reflecting the bias which new construction figures had given his planning for 1933. His listener offered to visit any number of plumbing and heating shops and stores wagering that they would find in each case a contractor-dealer who had some work that day, had some more work to look after tomorrow and the next day.

A third man in the room, who also had been talking gloomily about new building, spoke up to tell how an emergency job had developed at his home that previous week and he had called three contractors before he could find a man able to give immediate service—the first two were busy on other work.

It is not necessary to argue whether this is literally true in the case of every contractor-dealer. But it is significant of the peculiar advantage of the plumbing and heating contractor-dealer in having jobbing work to carry him along when new work is scarce. It shows the advantage he holds in being in a business where the products he sells and installs must function. People can not "get along without plumbing and heating."

To the business man anxious to get better results during 1933, it is worth while to turn back to page 121 of the November, 1932, issue of DOMESTIC ENGINEERING. He will find how modernization work has held a level line of volume right through the past few years and now outranks new work in dollar importance. And the figures shown, while the best obtainable, are manifestly incomplete as showing the true volume of jobbing as well as modernizing work.

1933 will pay dividends to everyone in the industry who plans and works to meet today's conditions as an opportunity.

A Utility Quits Selling of Appliances

NEWS coming out in the past few days from New York state carries a definite interest to every dealer in and manufacturer of electric and gas appliances. One of the largest of the utility companies there has begun to divorce itself from merchandising because it finds that dealers are now able to handle such sales.

It is of almost equal significance to recall that this company—the Niagara Hudson system—has been one of the foremost in trying out a genuine co-operative plan with dealers in distinction to some other utility companies. Some of these either made no effort to co-operate along the general principles worked out by the electric and gas groups or used a plan under which they retained full control of the purchasing end, dictated what makes were to be pushed and because of their control of the financing threw obstacles in the way of dealers selling other makes.

But the Niagara group tried out a more sincere co-operative plan and recognized the right of the dealer to maintain his independent position as the purchaser. Evidently the results secured when real co-operation rather than attempted control is the guiding principle of the utility company, has led this utility to decide it is better business to return to its main business of supplying electricity and gas.

Readers of DOMESTIC ENGINEERING will follow the effect of this important announcement with a deep personal interest.

To the dealers, it means that a large, representative utility has recognized the inherent advantage of working with the plumbing and heating merchant. It is not going to wait for legislation to take it out of the selling field. Utility competition on plumbing and heating appliances has been exceedingly difficult to combat because the utilities could operate the selling departments at a loss, since consumption of electricity and gas would ultimately more than recover such a loss.

To the manufacturers of appliances, so many of whom have sought utility company orders without any thought of the independent dealer, this announcement will be a sharp warning. The apparent advantage of doing business with large utility companies can never be successfully matched against the real advantage of having as customers a large number of independent dealers.

The new year promises some surprises in the field of merchandising and this news as 1933 opens is both surprising and important.

Oil water heaters and electric water heaters have been winning more and more favor among plumbing and heating dealers. The gas fired water heater has long been the plaything of the utility companies. But first legislation in Kansas and Oklahoma and now the voluntary retirement of a leading utility may mean that the game will once more be played under proper rules.

Organize for Business in 1933

BUSINESS will come in 1933 to those plumbing and heating contractors who plan to go after it and who carry out their plans. That is not an especially hard order to fill after one has first made up his mind definitely to use 1933 as a year of progress.

The odds are more in favor of the plumbing and heating dealer than of the merchant who merely sells. The essential character of plumbing and heating to the health and happiness of everybody; the skilled training which is vital in installing such products before they begin to function satisfactorily; the greater place which the home now occupies in the lives of so many who are living more quietly and sanely; the demand upon existing home facilities brought on by the doubling up of families who do not feel free to maintain separate residences; the awakening of plumbing and heating manufacturers to the need for supplying new and attractive designs of their products and the introduction of many new labor saving conveniences and of products which make for economy—these are a few of the advantages which will help the plumbing and heating contractor-dealer who tackles 1933 with the determination to make its conditions serve him.

The readers of DOMESTIC ENGINEERING operate their own businesses. The decisions for the new years are theirs to make. When the traditions and memories of the past are tossed aside, certain facts—like those summarized above—stand out as sign posts for the business men of 1933.

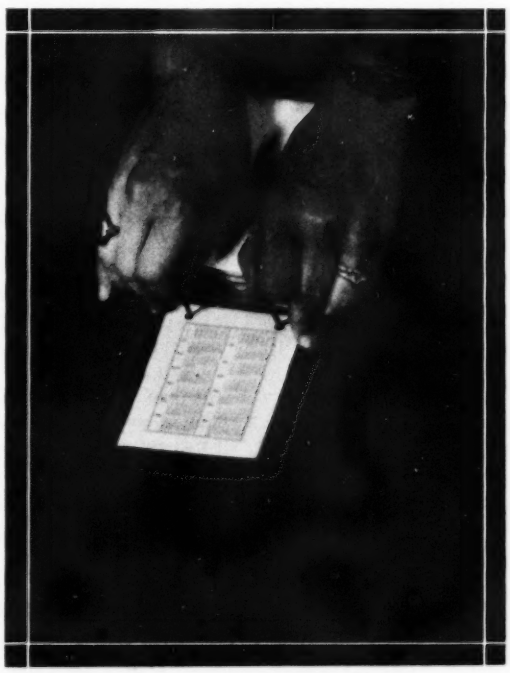
The first and the most obvious fact which will confront the man planning for 1933 is that there is not much new construction in sight. But this need not be taken as a discouraging element. The memory of the competitive conditions in connection with new work during the boom period is nothing to look back to with any satisfaction. There was then, as there is now, profit in remodeling and modernizing work, where that work was being created by the sales effort of the alert and energetic contractor.

Of course, our retailers have recognized this situation during the year just past. But all of them must now plan a real job of organizing their efforts to secure more remodeling work, by creating a desire for it in the minds of the people owning homes in their communities. This is no hit-or-miss job that is to be done. The men who have proved for themselves that remodeling work can be sold have given some thought to the organization of their businesses in order to handle that type of work efficiently; and they have organized their own time in order to take care of the contacts with customers which are so essential just now.

ORGANIZE FOR REMODELING

But the job of creating remodeling sales is one that needs organization, too. We do not suggest that the contractor should prepare to spend a great deal of money in advertising and promotional work. What he should do is to go to work with what he has—with his present list of customers and prospects. These must be classified in accordance with his knowledge of the equipment in their homes and his knowledge of their financial position. For example, in studying over the possible sales in a community, the contractor should draw on his knowledge of conditions in local industries, and should continue to watch what is happening in the various lines of business.

Immediately following this article is a story, by a contractor, in which some of the fundamentals of a good remodeling job are set forth. This particular contractor has been alert in connection with the possibilities of remodeling; and has done an outstanding job in the way of directing sales work where it would do the most good. For example, after Easter, at a time when the general volume of business was low, this contractor did the very logical thing of contacting local florists. Easter is a time of big business for the floral industry; and the results proved that this idea of keeping tab on what local business is doing is a very good one. Florists with greenhouses needed boiler repairs, new boilers, etc., and being in funds had the work done.



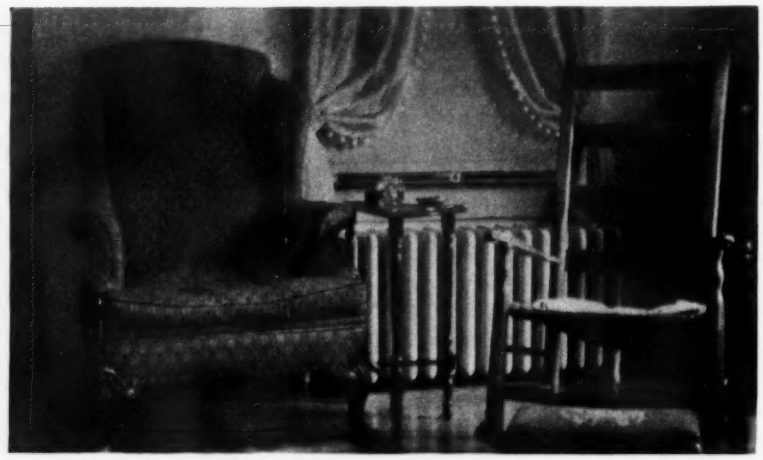
After organizing the method by which remodeling work is to be solicited, it is essential that the mechanics understand what is expected of them; and the equipment they are to carry with them for repair and remodeling jobs must be given some study so that there will be as much material sales as possible to bill, as against the labor charge.

Just recently, we have seen a great stack of letters, written by contractors who have organized themselves for repair and remodeling work by using a carefully stocked repair kit. These men admit that they themselves were surprised at the results. Customers were pleased at the complete equipment brought; the sight of items needed led to further sales, and the result in many cases was to bulk up the charges for material in a way that made the labor charge look a great deal more reasonable. To bill a few repairs, where the labor charge is greater than the material charges, is almost certain to cause a householder to ask questions, and, of course, when they begin to ask questions they do so with their minds made up that there is something wrong with the bill. The added sales of material, in the experience of these contractors, has been a great help in building profit and customer satisfaction.

SELL MORE MATERIALS

Careful thought in planning just how sales are to be created, and further careful thought in assuring customer satisfaction for jobs done, will make repair and remodeling business pay a profit. If the contractor has quit regretting that he hasn't as many men at work as he did two years ago, and is planning his efforts to meet the general conditions of business, and the conditions in his own community, he will weather this difficult time, and will swing into the time when business volume is again mounting with a clear idea of the methods that will bring him the greatest future growth.

1932 Experience in Modernization Jobs Means Profit in '33



This heating contractor pushed the "Spend for the Home" sales plan last year—His success leads to more intense drive in 1933 . . By C. B MAGRUDER

IN THE "Spend for the Home" campaign it is safe to assume that most of the money spent for plumbing and heating will go into modernization and improvements of old homes. A home, branded out-of-date by its plumbing and heating equipment, is hard to sell, difficult to rent, and uncomfortable and undesirable to live in. Many such homes are waiting this year for the wide-awake plumbing and heating contractor to make them marketable and livable. We are going after them.

Modernization work is new to many of the trade. There are those who have actually avoided such work in the past, not caring to be bothered with little work, as they called it. They considered it easier and more profitable to follow only such jobs as were covered by the detailed, blue-printed instructions of an architect. True, perhaps, but now that a volume of such work is not available, they will find in modernization work a test of skill in salesmanship and craftmanship that is worthy of their mettle and that will put money in their pockets if handled properly.

Heating modernization, the branch of such work with which I am most familiar, is by no means a bed of roses but nevertheless an interesting and profitable outlet. Asked what we find most necessary to its success, I should first say careful workmanship and after that co-operation with the owner.

Working conditions are never as easy on heating modernization as on new installations, and in most cases the details and specifications are left entirely up to the contractor as no architect or engineer is employed on the job. Because there is no such supervision should be all the more reason for co-operation between the owner and the contractor, the contractor personally assuming responsibility for a neat as well as an efficient installation.

A homeowner may buy only one heating system in a lifetime, while the average heating contractor will install dozens each year. The owner chooses, as best he knows how, a contractor whom he thinks is reliable and expects when the installation is finished to have a neat efficient heating job. The contractor then steps in and makes this owner either his friend for life or his enemy forever.

If he has the interests of his customer at heart, he

Fig. 1—"It is up to the contractor to see that a radiator placed under a window allows space at either end for drapes to hang straight should it be desired to have them fall to the floor"

will give him the best job that he knows how. He will consult him about the little things that count and offer him little considerations that will mean so much to him. In the matter of radiator locations, for instance, perhaps an owner will ask me, "Where are you going to put the radiator in this room, Mr. Magruder?"

"I had thought we would put it right under this window, Mr. Brown," I answer him. "Does that suit you?"

"Well, I guess so, but you see that's where Grandma always sits to sew, and she likes to get real close up so she can see the folks passing by. Does it have to go there?"

"Why no, you can just as well have a high radiator over in this corner. Would you like it better there?"

"Yes, indeed!"

On the other hand if a contractor is inclined to be arbitrary and hardboiled, he will override the owner's wishes in all matters. If an owner protests against an unsightly connection or an undue display of exposed pipe, an alibi artist can always explain that the joists are in the way or that he has to get to a second floor radiator and there is no other way of getting there. Maybe such is the case, and then again may be it is not true, but the poor average owner! He does not know the difference.

JOB IS EXCEPTIONAL FOR ERRORS

Such careless workmanship and inconsideration for the owner as went into the making of the heating system here illustrated is a disgrace to anyone who calls himself a steamfitter, and it is well that there are not many like it, or radiator heating would fast be riding for a fall. While exceptional to find a job where so many faults are so glaringly apparent even to a layman's inspection, it compactly pictures many errors to be avoided in installing heating in an old home.

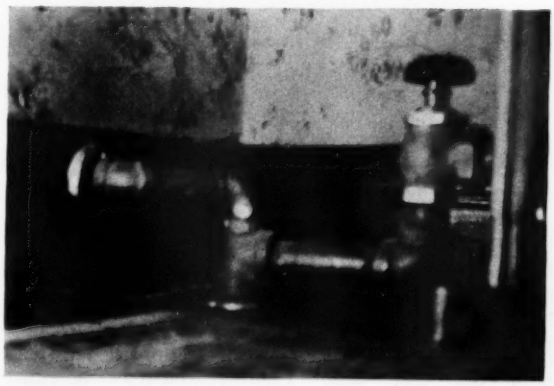


Fig. 2 — This horrible example of what should not be done in modernization work speaks for itself as far as what is wrong

The house under discussion is an old residence which has been converted into two apartments, one upstairs and one downstairs. A steam heating system has been installed. The best of material has been used, and it heats acceptably, but you can start at the front door and find something wrong in each room with the workmanship of the heating apparatus without being particularly inclined to faultfinding at that.

Let us first look at a few rooms in the downstairs apartment. You enter the front hall, and the first thing that arrests your attention is a riser running to the second floor hall radiator. This riser runs squarely up the middle of a wall space on the first floor. Aside from being unsightly, it kills that wall space for any other use, whereas it could just as well have been run in the corner where it would have been inconspicuous and out of the way. There seems no good reason for it being run as it is other than that, so run, it makes a direct connection to the radiator in the second floor hall. Perhaps the installer was short on elbows! At any rate he certainly took the shortest distance between the two points to be connected, and if we wished to be unduly squeamish we might further call attention to the coupling in this riser and to the fact that the pipe, painted aluminum bronze, stands out against the tan wall like a sore thumb.

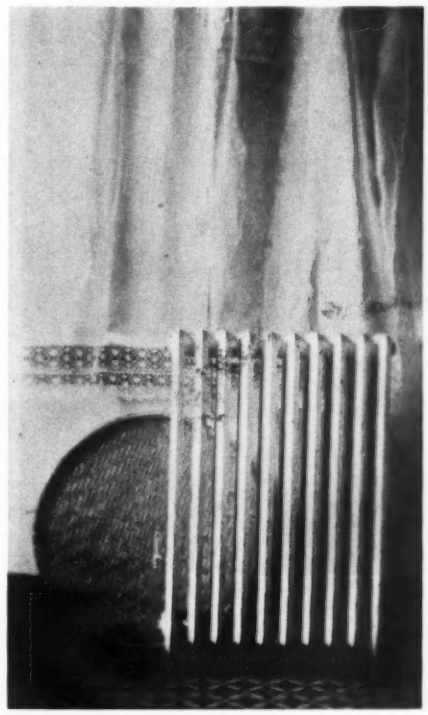


Fig. 3 — This radiator extends above the window sill, which is not good practice, and in addition, it is about 1 ft. off center for no good reason

We go on into the living room. A high radiator is installed in one corner next to the front window. The location of this radiator was primarily well selected, but the radiator itself is placed so that it extends out over the window frame three inches, leaving eighteen inches of space at the other end between it and the wall. This arrangement was not necessary but perhaps easier for the workman, as he installed a riser and the valve to this radiator at the far end. Both could have been accom-

modated there, however, and yet the radiator need not have extended over the window frame.

Going back into the dining room, it looked as though we would find nothing to criticize there. A low radiator of the proper height was installed under the dining room window. Closer inspection showed, though, that the radiator, intended to be centered with the window, missed doing so by two inches. Just enough of a miss to denote careless workmanship again!

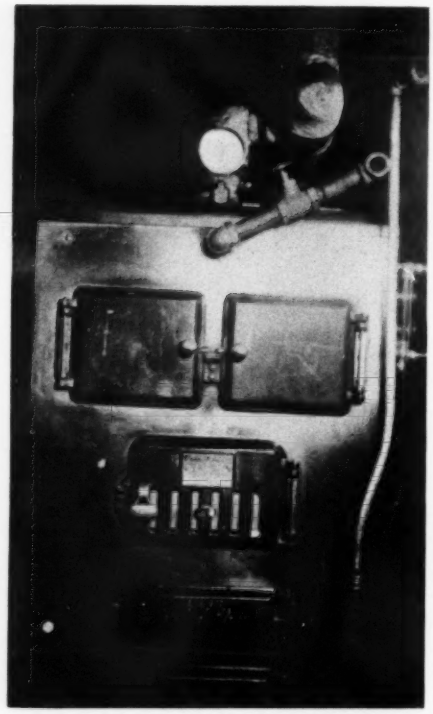


Fig. 4—As for defects in the basement work, the blow-off connection was left on the boiler and the pipe covering was nothing to boast about

We now go into the stairhall leading to the second floor apartment. The radiator there is of a type well suited to the narrow space, but the front legs are resting on wooden chips, two under each leg, raising it about an inch off the floor level, while the back legs are hanging in thin air. The floor plate is also missing around the connection, leaving a jagged ugly looking hole in the floor.

RADIATOR SHOULD BE CENTERED

Nothing seems to be wrong with the second floor hall radiator other than that it stands out from the wall further at one end than at the other. Had we been making this installation, however, we would have done away with this radiator entirely, as space is limited, and sufficient radiation could have been added to the lower stairhall radiator to have taken care of it. Such elimination would also have done away with the necessity for the objectionable riser discussed in a previous paragraph.

In the dining room of this second floor apartment, the radiator is under the window, in the center of the side wall. The connection comes up out of the floor in the corner, and a 1¼-in. pipe runs four feet across the floor to the radiator at an angle. The floors are not hardwood and two or three of the boards could have been taken up easily and this connection concealed with very little trouble.

In the bathroom the radiator, spindly to begin with, sits on 4-in. high pedestals, for no better reason apparently than that it was easier to bring the connection through the plastering above the baseboard than through the baseboard, and even so they made a sorry looking mess of the plastering.

On the other hand in the corner of the bedroom as shown in Fig. 2, the baseboard was butchered. Three holes were cut in this baseboard, and the two not used were left open, not even plugged, while the third, cut too big, is not completely covered by the floor plate. The connection to this radiator, as illustrated, is not even painted. Pipe and fittings were left in their raw state and red dope showed around the joints. This radiator is also on pedestals but so insecurely that one leg was standing out in space as you can see in the picture.

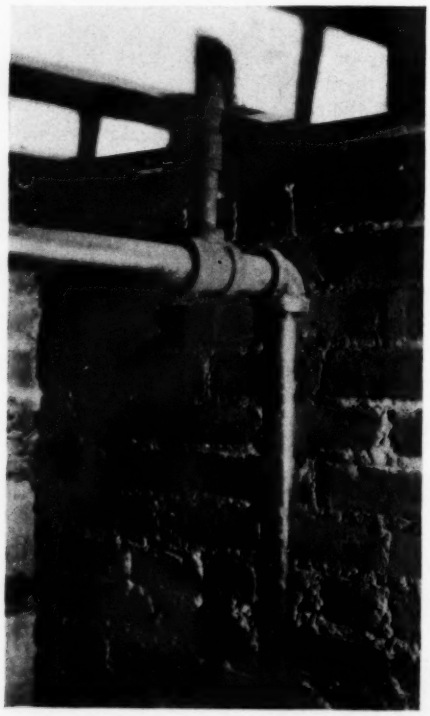


Fig. 5—The worst example of poor workmanship which this contractor encountered and corrected is shown here where the joist was hacked away to allow for the vent

In the kitchen of the same apartment the radiator is as shown in Fig. 3. In the first place it extends above the window sill which is bad practice, while in the sec-

(Continued on Page 113)

When it's ten degrees below zero and the lines are buried underneath the ground, this article will tell you how

Electricity is Used to Thaw Frozen Water Pipes

By C. F. Bowman

ELECTRIC methods of water-pipe thawing have been in use for about thirty-five years, and in very many places electrical thawing is established as a standard procedure. For thawing mains, cooperation with the power company is necessary, whoever it is that takes the responsibility for the actual thawing.

Three facts make this method possible:

(1) Electricity flows readily in metals, generating heat as it goes; and most pipes are metal.

(2) Ice is an insulator, having about ten times the resistance of slate or fiber-board. The currents do not, therefore, wander around through the frozen earth as they would in warm moist earth, but are largely confined to the metal of the pipe where they are wanted.

(3) Electric power in adequate amounts is available to most places having water pipes.

WHERE PIPES FREEZE

Water pipes freeze most commonly in the following places:

(1) Close to the walls, inside the house.

(2) Near a main, under the paving.

(3) In yards where they are exposed by terraces or other uneven ground levels.

(4) Occasionally a large main freezes.

(5) Due to local conditions, pipes may freeze anywhere, of course.

The reasons for the first group are obvious. As to the second group, when the mains are beneath paving, the service taps there usually are nearer to the surface than are the pipes in the yard. Also, the loose snow in yards and the loose grass and earth beneath, keep the cold out better than does the paving covered with packed snow or none at all. Hence the pipes under the lawn have better protection than where they are under the paving, and freeze less often.

The larger mains and submains usually have sufficient water flowing in them to keep them clear. When they do freeze, any pipe of 3 or 4 in. in diameter or over usually is a special job requiring especially large transformers and possibly a special power supply. The large jobs, then, are essentially jobs for the power company and should be handled by them through their trained organization of service men who are accustomed and equipped to do this class of work.

THAWING PIPES IN THE HOME

Most power systems have one wire grounded at the transformer, or at the meter box, or both. Theoretically, the other wire could be attached to the faucet, and the current flowing "to ground" (and returning to the transformer through moist earth under the frozen part) would thaw the pipe. The current, however, would usually be too large; the house or the transformer fuses would be blown out, or else damage might be done to the house wiring or to the transformer windings. To avoid this, the "hot line" can be connected through resistances to reduce the current.

One wire (only) is run from an ordinary plug cap to a multiple socket. The other wire from the socket is connected to the faucet of the frozen pipe. The singly wired plug cap is then pushed into a power outlet. Large lamps, heaters, flatirons, or other household appliances should then be connected into the multiple socket. The more watts rating of the devices connected, the greater the current and the less the thawing time. (Twice the current will thaw the pipe in from one-fifth to one-third the time.)

In case the lamps do not light, the plug cap should be pulled out and inserted again, reversed. If they still do not glow, either the power system is poorly grounded (or not at all), or else there is a poor contact with the pipe. Good contacts often are hard to get. If tightening the contacts brings no results with the plug cap in either position, a connection must be made from the other plug cap terminal to a point beyond the frozen spot from the first connection.

THAWED IN 15 MINUTES

By this method a service, frozen beneath the house, was thawed in 15 minutes using a 500-watt heater as the current limiting resistance. Another service required 10 hours with 2000 watts connected; this one was frozen in a colder location, and exposed to drafts. In each case,

"A welder in Pennsylvania, seeing the possibility of putting his equipment to work during the slack season, let it be known that he would thaw water pipes. In spite of his inexperience in this type of work, he had water flowing in about twenty-five minutes."

the pipes were frozen in air, inside the house but near the outside wall. This method will not always work if the pipe is too exposed to severe cold, as the current which is permissible is strictly limited.

As for precautions which are necessary, some cities, by ordinance, require the disconnection of the services being thawed by any electrical method. This particular method involves some fire hazard, although it is slight.

Fuses should be ample, both in the main and in the branch circuits, for the loads to be connected. A fuse should be able to carry 1.1 times the watts divided by the volts. Usually this means about as many amperes as the watts divided by 100, and choose the next larger size. No fuse larger than 15 amperes is allowed in branch circuits by the electrical code.

No one should be allowed to work around the pipes while they are connected as it is possible to get a shock from the pipes.

Flatirons or ironing machine elements used as resistances may be injured by becoming too hot. These elements supposedly are kept at a reasonable temperature by being in contact with damp clothes.

If it is necessary to make the second connection mentioned, connect first through a small lamp. If the lamp glows either way the plug cap is inserted, the system is poorly grounded. The second connection can be made with the plug cap inserted in the way that causes the lamp to glow most dimly. If the lamp does not light either way the cap is turned, there is a poor contact somewhere.

Thawing services frozen outdoors is the most common type of thawing. Ordinarily, there is a current of 30 amperes at 110 volts available at the house switch. This is a sufficient power supply, although it must be changed to a higher current at a lower voltage. This voltage should be about five volts, plus 15 volts per 100 ft. of straight pipe. This is equivalent to 1 volt for each seven feet of pipe. Each elbow, where there are numerous bends, should be added in as an extra foot of pipe to allow for the joint resistance of contact.

LARGE PIPES REQUIRE MORE CURRENT

In most cases this will give sufficient current, and will automatically take care of the size of pipe. The larger pipes require more current, but, as they have more metal in them, they will allow more to flow. The proportional increase will be sufficiently close for pipes below 2 in. in diameter. In the rule given, here for figuring voltages, allowance has been made for the resistance of the leads, if the wires used are the sizes suggested in Table I, which also gives estimates of the currents that will flow.

Table I

Pipe Diameter (in.)	¼	½	¾	1	1¼
Estimated current (amp.)	75	125	150	200a	300a
Wire Size Recommended:	6	4	2	0	000
Approx. Wt. 100 ft. wire:	10	16	25	40	65

a. This current is too heavy for house fuses, if used with a transformer voltage of 15 volts. Triple-braid weatherproof wire should be used.

It should be emphasized that this table is only an estimate. Local conditions are so variable that the 125 amperes estimated for ½-in. pipe may vary anywhere from 50 to 175 amperes. If the ground is not frozen thoroughly, leakage currents will increase the figure from that estimated; rust and some pipe-joint compounds increase the resistance and decrease the currents. The iron used in different pipes differs greatly in its resistance. If the current falls much below that given, however, there is probably a poor contact; although it may be underground and inaccessible.

Commercial transformers sold for thawing pipe are not made as flexible as the rule given above would call for; nor is it necessary that they should be. Because of the local variations, a certain amount of "connect her up and see what happens" is always necessary. The rule is based on the currents required to thaw the pipe in about half an hour, although the time may be 5 minutes if the pipe is only slightly frozen; or, in very special cases, it might not thaw at all.

One transformer sold for this use gives the required current capacity at 11.5 or 23.0 volts, according to the connection used. This transformer weighs about 70 lb. Two of these are recommended where long pipes are to be thawed, connecting the pipes in series. For larger sizes of pipes, two transformers should be connected in parallel to give sufficient current.

TRANSFORMERS RECOMMENDED FOR SERVICE

Another manufacturer recommends the use of a standard type transformer, from 5 to 20 kva. size, but with special 55/110 volt coils in place of the usual 110/220 coils. This is to be recommended for long pipes, where it will give good service; but the use of 55 volts on a short service pipe will result in an unnecessarily large current. This transformer would be satisfactory for pipes up to 3 in. and from 300 to 600 ft. long. As it will ordinarily be operated from 2,300 volt wires, an electrician must operate it.

As pipe thawing transformers are to be operated in cold open air, special cooling is not necessary. Ample ventilation should be allowed, however, and transformers should not be boxed in unless special provisions for cooling them are made.

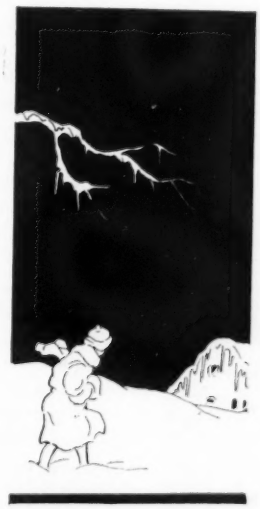
The necessity of using large, well-insulated wires for connections should not be overlooked. The conductor recommended for most work is size 0, triple braid weatherproof insulation. The insulation may be burned entirely off any smaller wire when using the currents required for some cases of 1¼-in. pipes. If only smaller pipes are to be thawed, correspondingly smaller wire may be used based on the currents given in Table I. Charred insultation is no insulation, as carbon formed by the charring is a conductor; and when working in

sloppy ground, serious shocks may be received through bad insulation. The connection wires may cost as much as the rest of the equipment in some cases, as they are very large and heavy.

While the use of an ammeter is not essential, it is a valuable help for determining what is going on: how long it should take to thaw the pipe, how good a connection has been established, and whether the rest of the equipment or power company's distribution transformer is being seriously overloaded. (Temporary, heavy overloads on distribution transformers during cold weather are permissible.)

THAWING LARGER MAINS

If Table I were extended to include, say, a 10-in. main, a current of about 6,000 amperes would be indicated. At 15 volts, for a 100-ft. section, this would be 90 kw., requiring a 75 kva. transformer, allowing it to be overloaded. This transformer would weigh about ¾ of a ton, standing 4 ft. high; and each lead would have to consist of six power cables in parallel, each an inch in diameter. For 200 ft. of pipe it would take a 150 kva. transformer. Hence it can be seen that it is not feasible to attempt to keep on hand the apparatus required for thawing large pipes. Power companies will usually have transformers on hand, moreover, which can be mounted in a truck and moved about as needed. As the supply must be taken from the 2,300-volt wires, this equipment must be under control of the company's electrician.



If a transformer is used having a 110-volt secondary winding (or low-voltage) not less than 20 ft. of pipe and 200 ft. of connection leads should be connected in the circuit. The kva. capacity of the transformer should be about five times the diameter of the pipe in inches. Thus a 2-in. pipe should call for a 10 kva. transformer; a 4-in. pipe for a 20 kva. transformer, and so on. For shorter lengths of large pipes, the electrician will be able to connect two similar transformers with their primaries in series and their secondaries all in parallel so as to give 55 volts.

In thawing these larger mains, even more than with the smaller pipes, close specification of apparatus and prediction of results is impossible. The only way is to get a general idea of where to start trying, then start in. If no water flows in 3 or 4 hours, increase the current and keep trying. The need for the help of a good electrician, the full cooperation of the power companies, and the help that can be obtained from an ammeter to see what is going on, should all be obvious. Solutions and methods must be worked out from the materials on hand by the power company, and hence each main, as mentioned previously, is an individual case. Power companies usually are willing to help as much as possible in a case of this sort, as a frozen main is a calamity to the portion of town affected. It is a health hazard as well as an inconvenience if it lasts for any length of time.

Some of the expedients used and their results under unusual circumstances are quite interesting. In New York State a 6-in. pipe running under tidewater was frozen. The salt water was at a temperature of 30 deg. Fahr., or two degrees lower than the freezing point of the water in the pipe; and the tide water was moving at times 5 to 7 miles per hour. (It must also be remembered that salt water is a conductor; and while it is not nearly as good a conductor as the pipe, there was much more of it. This allowed the electric current to leave the pipe and do no thawing.) This pipe was thawed in two days, but it required transformers with a combined capacity of 600 kva. to do the job.

In the case of a 4-in. main running through salt-water marshes in New Jersey, the attempt was abandoned after several days, using currents up to 3,000 amperes. This failure is mentioned because it is unusual.

A type of apparatus not mentioned previously, but which is quite applicable to this work is the electric welding equipment in its portable form. A welder in Pennsylvania, seeing the possibility of putting his equipment to work during the slack season, let it be known that he would thaw water pipes. His first job was an 8-in. main! In spite of his inexperience in this type of work, he had water flowing in about 25 minutes after turning on the current, and a full flow in about 45 minutes. Incidentally, the village council immediately passed an ordinance prohibiting anyone from tearing up sidewalks or paving to thaw pipes unless electrical methods had been tried.

The piping for another interesting case, this one in Indiana, is illustrated in Fig. 1. The pipes to both houses, A and B, were frozen, evidently near the taps at C, under macadam paving on concrete base. As the transformers were some distance away, it was found that it was safe to connect the two 110-volt wires directly to the pipes. This connection was left on for 5 hours with no results. The next day with the help of the power company, a 15 kva. transformer was placed on a truck and supplied from the 2,300-volt lines. Very long connections were used, and connections were made at B and the fire plug E. The service was then thawed in about 15 minutes; but before the connection could be changed from B to A, water was flowing in house A also. Evidently the pipes touched near the point D, as they were laid in the same trench. In the first case the current flowed from A to D and B without flowing through the frozen spot near C. In the second case the current divided at C, recombining at D to return to B. The thing that had balked the first attempt in this case, caused the second attempt to do double duty.

In another Indiana village, thawing for several hours brought no results. The water company's representative was finally persuaded to get his curb key, although he insisted at first that it was the only key in town and had been locked up in his office where no one could have got it to turn the water off. Turning the valve gave a full flow of water; and no one ever found out who had shut it off in the first place, nor why.

(Continued on Page 103)

By Wm. W. Stevens

What's Wrong With this Vapor Heating Job

The fundamentals which are discussed here cover one of the most common causes of trouble in heating work

WHAT'S wrong with this installation? Here is a vapor heating system in a seven room house. The first year the system was operated, the owner burned twenty tons of coke. For the locality in question this was an excessive amount. In casting around for an explanation, the building itself was examined. This did not lead anywhere because it was found that the building was of better than average construction. The walls were made of four inches of brick backed up with nine inches of hollow load bearing tile. The second floor ceiling was insulated with both a board insulation used as a plaster base and a fill insulation between the rafters. However, the window and door openings were found to be loose and only partially weatherstripped. There were no storm sash. Neither was there any insulation on the piping. Accordingly this was offered as an explanation and at the beginning of the second heating season, all of the openings were carefully weatherstripped and all of the supply mains in the basement were covered. Soft coal instead of coke was recommended and used because of the flash heat needed for the quick generation of vapor. With these changes, the second season showed a fuel consumption of fifteen tons of soft coal as against the previous year's consumption of twenty tons of coke. This, of course, was noteworthy. However, the southeast bedroom on the second floor, the dining room in the same corner on the first floor and the sunroom on the south were slow to heat. The radiators seldom became as hot as the others in the house. The system was designed to operate on a few ounces of steam pressure. With the boiler held at one pound of pressure or better, these radiators would heat. When the matter of excessive fuel consumption was adjusted somewhat, the question of uneven distribution of heat became uppermost in the owner's mind and so the problem of giving satisfaction was broken wide open again. It became apparent that there was something fundamentally wrong with the system.

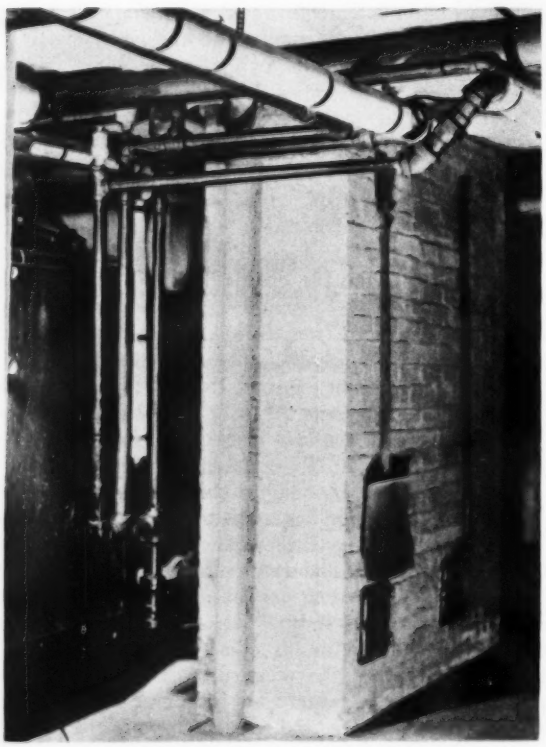


Fig. 1—This photograph shows how the piping was arranged after the difficulty was discovered and corrected

The piping as it was installed is shown in Fig. 3. The sun room and dining room on the first floor are located in the south and southeast portions of the building respectively. From the piping layout, Fig. 3, it will be observed that these rooms are served by the piping at the end of the longer of the two loops. While one loop is much longer than the other, it was not considered that this was the sole cause of the difficulty although it was recognized that the increased distance the vapor was required to travel to the end radiators would make them the last to heat.

Even when the radiators in the short circuit were closed, the radiators at the end of the long main would not heat satisfactorily, thus proving that it was not a case of lack of boiler capacity. This was further illustrated by valving off some of the radiators taken off at the start of the longer main. Little difference was noted in the heating ability of the three radiators in question. This, together with the fact that the heating of rooms having south and east exposures is facilitated by weather conditions, made the problem more difficult to understand in the preliminary analysis. The investigation then proceeded to a consideration of the venting of the system. This gave the first promise of success in locating what was wrong. Here it was found that the end of the supply main of the short circuit was connected to the end of the long circuit main, both having a common vent. Merely by way of making a double check, the vent was touched. It was too hot for the hand to bear, then illustrating that vapor had reached and had acted upon the thermostatic element of the

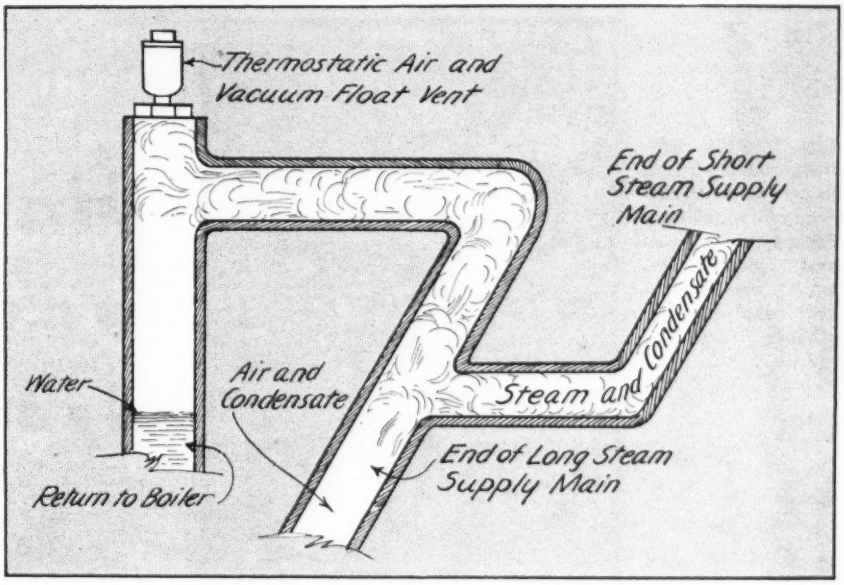

Thermostatic Air and Vacuum Float Vent
End of Short Steam Supply Main
Steam and Condensate
Water
Air and Condensate
End of Long Steam Supply Main
Return to Boiler

Fig. 2—As illustrated here, the vapor from the short circuit would reach the thermostatic air vent and close it before all of the air could be exhausted from the longer circuit

vent to close it. Next, the end of the longer main was touched just ahead of the connection with the short main. This revealed that the longer main was relatively cool. The end of the shorter main was hot.

The detail shown in Fig. 3 is of the piping serving the ends of the two mains. This is what would happen: The system would cool off between firings so that at the next firing, vapor would be sent into empty or partially filled mains. Air that had leaked into the system was forced ahead of the vapor in both supply loops and out of the common vent. This would go on until the vapor reached the end of the short circuit and, in turn, the thermostatic air vent, at which time the thermostatic bellows would close the opening and permit no more air to escape from the main supply system. However, at this time, the vapor in the longer supply main only had sufficient time to get as far as the branch connection to the sun room radiator. With the air vent closed, the longer main became air bound. In time, air would be forced out of the system through the radiators and out of the vent serving the return piping. Naturally, a pressure of one pound or more in the boiler aided this air elimination. But, such a pressure caused control equipment to be operated which checked the source of heat so that the pressure was not maintained long enough to fully eliminate all of the air. The result was as already has been pointed out; the end radiators on the longer circuit never would become hot quickly or maintain even mild heat for any length of time.

The solution was that of separating the ends of the supply loops. Individual vents were provided and each return from the ends of the mains was dropped down separately to a point below the boiler water line. Here they

(Continued on Page 112)

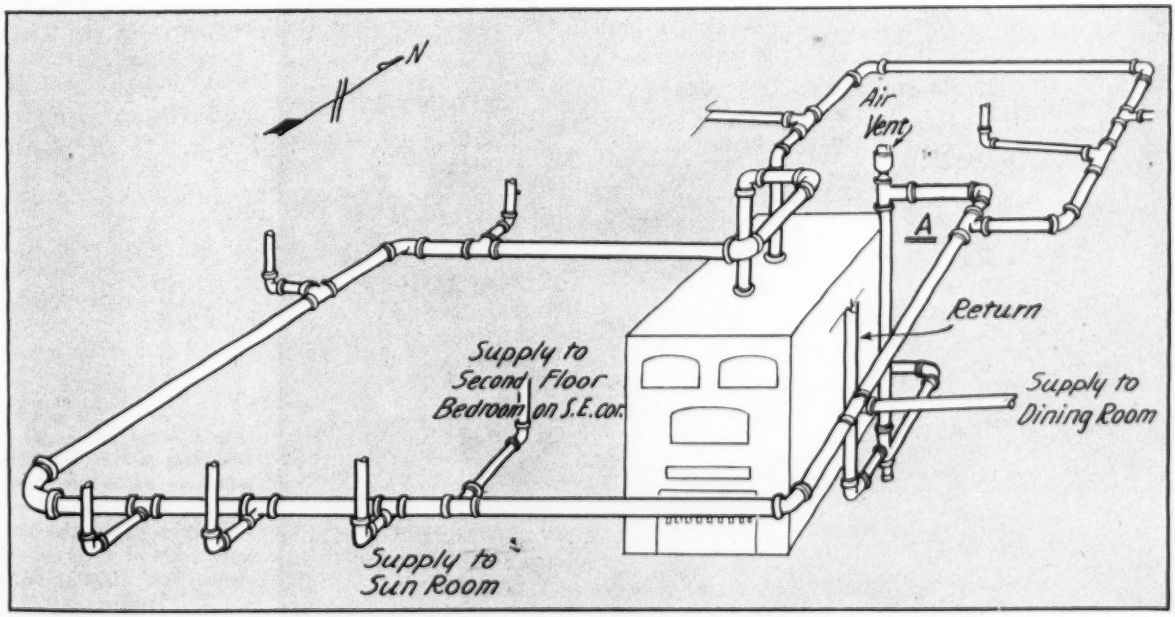


Fig. 3—Here is a drawing of the supply piping as it was installed originally. The connections at "A" caused the difficulty. The return piping is not shown fully

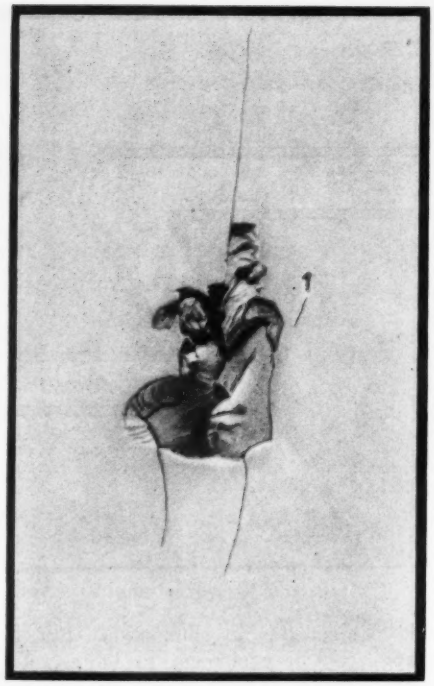


Fig. 1—This illustration shows a chip in an enameled surface which has been caused by an uncrating bar. Methods for avoiding this are outlined here

How to Guard and Classify Iron Enamel-

Table of allowable developed by Sanitary

THE base of enameled ware is cast iron. While the most modern equipment is used in molding and other operations, enameling is an art which requires handwork and individual skill to a high degree and therefore cannot be produced regularly free of unimportant variations and minor blemishes.

The enamel coating is of porcelain composition which may shatter or crack like china or glass if subjected to severe strain, shocks or abuse. Prevention of such abuse cannot be given too much emphasis since the smallest chip or crack in the enameled surface makes an otherwise perfect fixture worthless.

The question then becomes one of how to guard against accidental and careless damage. Also, how can an imperfection caused by handling be recognized as against one caused in manufacture? Finally, of the manufacturing blemishes, to what extent are these allowable before a fixture is rejected? The Sanitary Enamel Ware Association has gone into this subject and has answered all of these questions. The material which

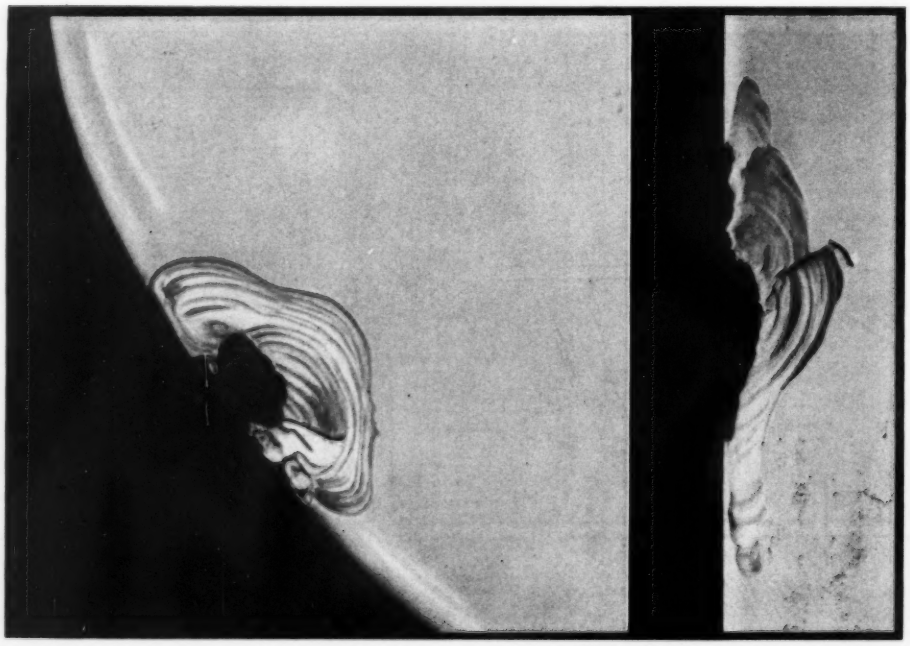


Fig. 2—The two views at the left show chips in enamelware which have been caused by careless handling. Note the beveled edge of the fracture which is a distinguishing feature

Against, Learn, Blemishes in Ware Finishes

blemishes is given as Enamel Ware Association

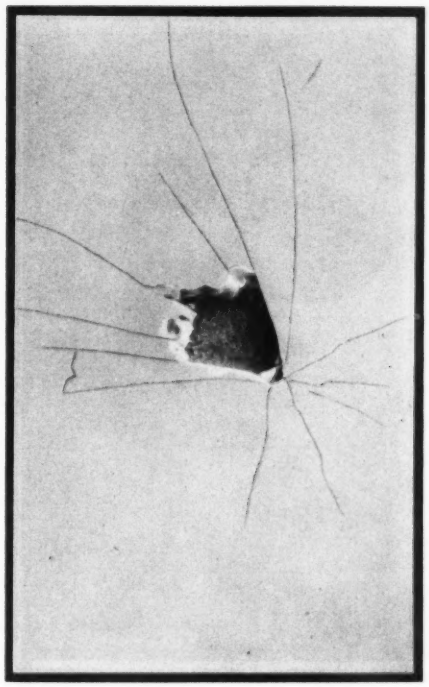


Fig. 4—This blemish is known as a lift and it is the type which is caused by either rough handling or an outside blow. This lift is to be distinguished from the ones shown in Fig. 8

they have developed forms the basis of this article. These detailed descriptions and close-up views are presented so that many of the reasons for damaged ware may be more readily seen and understood. They should serve as a guide for field use.

The illustration marked Fig. 1 shows a chip caused by an uncrating bar. Enameled ware should be uncrated with great care to avoid damage. Use a pinch bar and nail puller to remove the crate slats and inside blocking, being careful not to strike the ware or pry against it. Most crates are so designed that they can be opened from the bottom easily and quickly and it is necessary to take off only a few slats and blocking pieces to remove the ware from the crate. After a fixture has been removed from a crate, particular care should be taken until it has been installed.

Do not handle enameled ware like iron castings—a china dish will break if dropped.

Do not move the ware more than is necessary and when it is necessary do not walk or roll the crated ware.

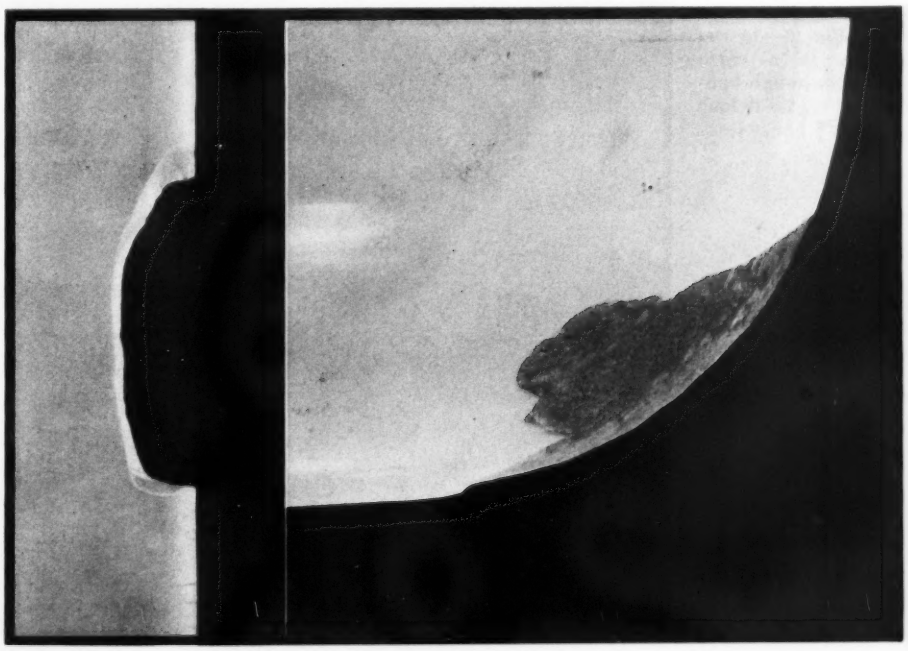


Fig. 3—The two views at the right show chips caused by faulty manufacture. In this instance, the edge of the fracture is at right angles to the surface of the fixture

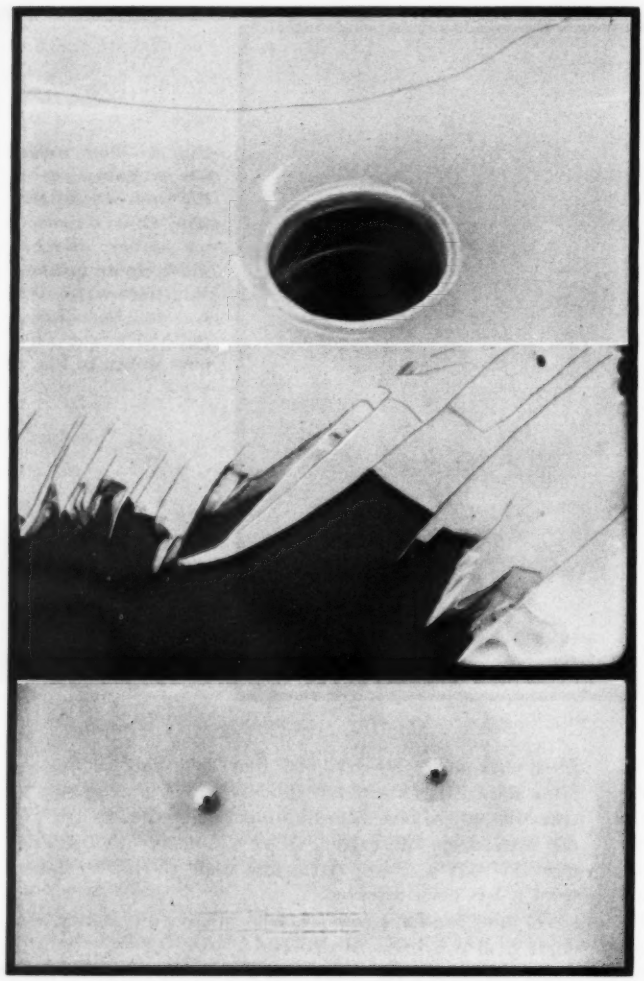


Fig. 5—This is at the top and shows a craze caused in manufacture. Fig. 6—In the middle, is a craze caused by rough handling. Fig. 7—Below, are two pin holes

The two close up views shown as Fig. 2 on page 38 are chips caused by careless handling. Note the beveled edge of the fracture.

The two views in Fig. 3 illustrate chips due to faulty manufacture. Note the line of fracture at right angles to the surface of the fixture. Small chips on beads and edges of fixtures that will not be visible after installation are not causes for rejection.

The photograph, Fig. 4, shows a large area of casting from which the enamel has separated. The lift illustrated in this picture was caused by either rough handling or an outside blow. To prevent damage like this, unload with great care, using skids and slide the ware down easily. Do not drop enameled ware.

If the line of fracture is at right angles to the surface of the fixture, as shown in Fig. 5, the lift was the result of a poor bond between the enamel and the casting.

A crack or hairline in an enameled surface, usually is caused by rough handling. The two views shown in Fig. 6 illustrate damage due to rough handling.

Crazes like the one shown in Fig. 7 are due to manufacturing causes, and usually are discovered before shipment.

The illustration in Fig. 8 is a splendid example of damage caused by rough handling. It has not only caused a craze in the enameled surface, but has separated a large portion of enamel from the iron.

A hole which extends through the enamel to the casting is known as a pin hole and is shown in Fig. 9. A tabulation of pin hole allowances is listed farther on in this article.

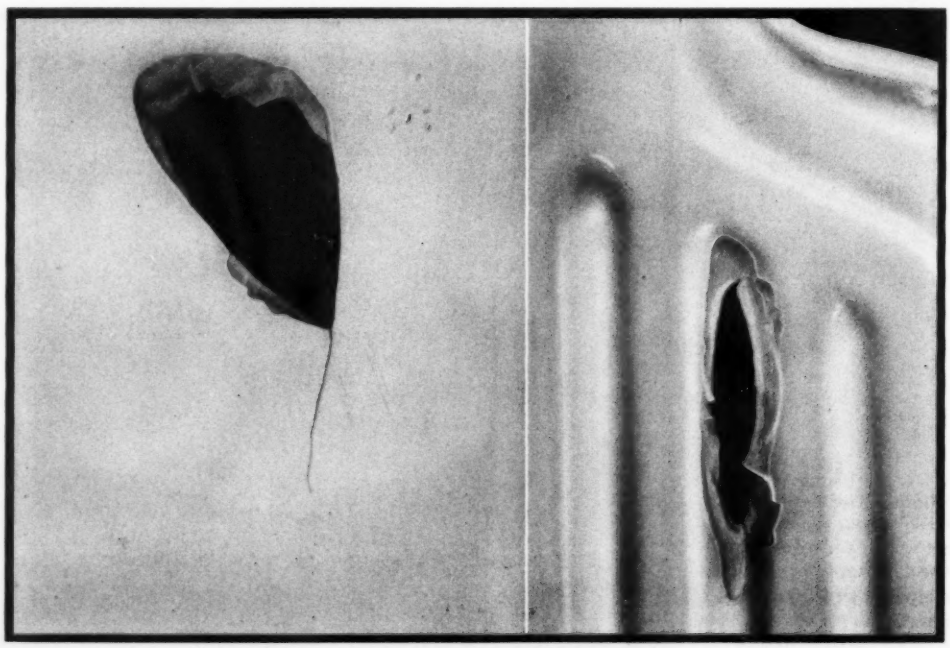


Fig. 8 — These two examples of lift show the line of fracture to be at right angles to the surface of the fixture and indicate that they were caused by poor bond between the enamel and the casting

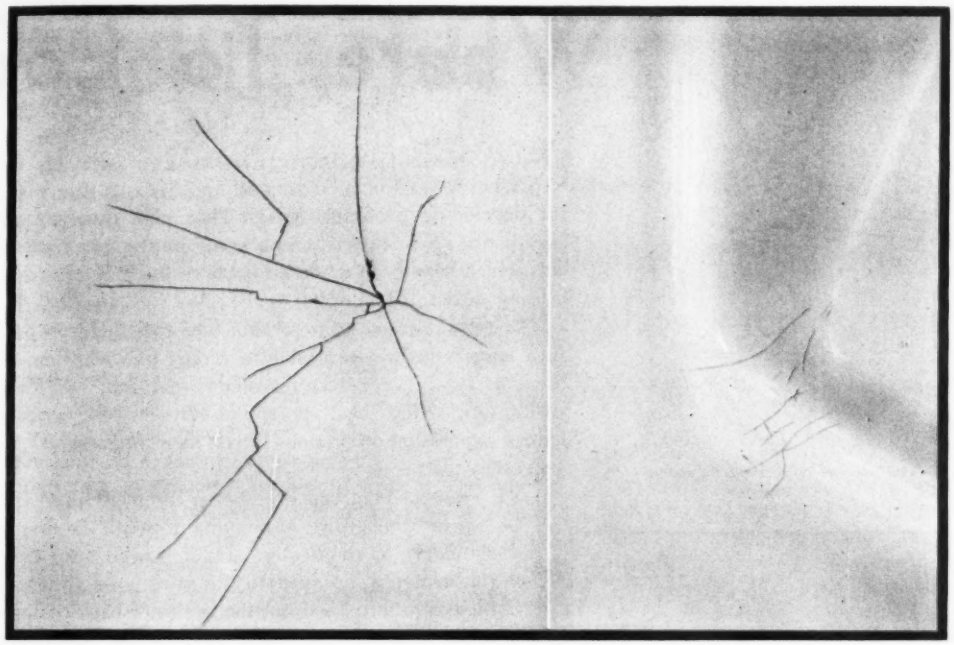


Fig. 9—The cracks or hairlines shown in these two views are crazes which were caused by rough handling

Fig. 10—Of the views below, the top one shows scratches caused by misuse. Fig. 11—In the middle is shown an acid stain. Fig. 12—At the bottom are shown specks consisting of foreign matter

This illustration, marked Fig. 10, shows scratches resulting from misuse. Scratches are invariably the result of carelessness in uncrating and in the improper use of fixtures during installation. Plasterers and tile setters should not be allowed to stand on unprotected enameled surfaces or to store tools in fixtures.

Enamel, white and colored, which is acid resistant, is now offered by most manufacturers. This enamel, superior to regular enamel in its acid resisting qualities, is still subject to the same abuse as regular enamel. It is resistant to fruit and vegetable acid, but not always to cleaning acids.

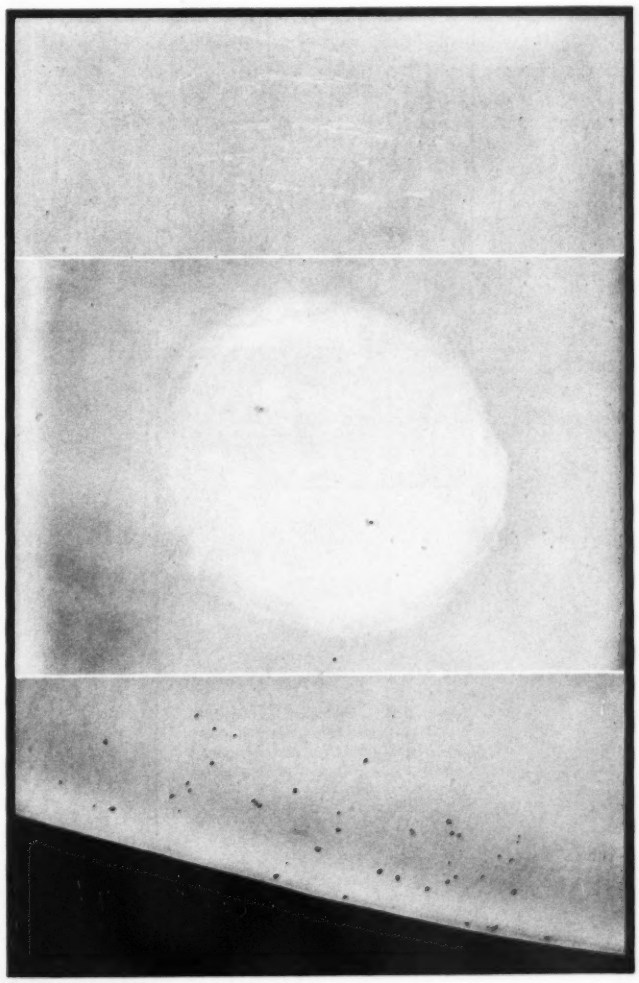
Enameled ware is affected by strong acids and gritty cleaning materials. The illustration in Fig. 11 shows a damaged surface resulting from lemon juice on regular enameled ware, the gloss being entirely destroyed.

No abuse is so damaging as is the cleaning acid used by tile setters or other craftsmen. It is usually a costly damage requiring in many cases the actual replacement of the fixtures already tiled in. The manufacturers are not responsible for this and will not replace such fixtures at their expense.

To prevent such damage cover the surfaces of all installed fixtures with a good quality of protecting paper, and see that it is kept intact until the use of the cleaning acids has been finished.

Small particles of foreign matter which show on the enameled surface are shown in Fig. 12. For detailed information on these allowances, refer to the following tabulation:

(Continued on Page 111)



Where To Look

I

The idea is conceived by someone

II

It is talked over by all concerned and the "kinks" straightened out

III

Then the advertising force gets busy—layout men, artists, copy men, polishing up the idea and getting it ready for presentation

IN two issues of DOMESTIC ENGINEERING in 1932, we presented a simple, workable and inexpensive plan for developing profitable sales. That plan involved an easy listing of prospects, and a study of the many products which have been made available to the plumbing and heating dealer for selling.

The response has been prompt and satisfactory—and in a later issue we were able to report our selection of how a typical contractor-dealer organized his first selling unit of ten "best" prospects. Others have written letters expressing in various ways their interest in the suggested plan.

But no plan can ever be so complete as to lift entirely the effort of making it work from the shoulders of the dealer. He it is who must take this material, apply it to the sales possibilities in his community, and put the initiative back of it to make it work. We have reduced the job to its easiest terms; and in the present article we aim to go another step in the analysis of selling possibilities. The purpose of this article is to show the dealer how to tap the sales help material there is in the announcements which describe these products and in the experience of the men who are making and selling these new items.

One of the old, familiar sayings of the English language is: "Reading makes a full man." Each of us knows one or two indi-

ok for Selling Ideas

How to make use of the sales points which are in manufacturers' advertising—where it represents the careful thoughts of men trained in merchandising

viduals who are, as we say, well posted. That doesn't mean merely that they know what is the latest news—but they are able to discover what lies back of the latest news. They seem to anticipate events and happenings because they learn to recognize trends. It's what is back of the success, let us say, of the man who is dealing in real estate in a community that is growing. Somewhere along the line he puts all his facts together and is able to see, more quickly than others, the direction in which the community development is most likely to spread.

THEY BEAT THE GUN

Some contractor-dealers were aware sooner than others of the trend towards the automatic heating idea. Others were "on to" the place of welding in certain operations before others who had an equal chance to see what was coming. And, to get down to a case that is closer to the point, think back about ten years ago. The merchandising idea was just catching hold in the plumbing and heating field. There was a certain number of men who saw what was coming more quickly than others. Similarly, when new building was playing out, there was a group of plumbing and heating contractors who saw that there would be a period of time during which repair, jobbing and remodeling work would hold out the best chance for a profitable volume. They "beat the gun."

We are in a time of change and transition. Some manufacturers, with their national viewpoint, and with the task of keeping productive machinery as well occupied as humanly possible, are aware of the character of the time. And it is in the sales helps of these manufacturers that the dealer will find reflected the recognition on the part of the sales brains on the manufacturing side of

IV

The advertising gets into the hands of the contractor who, if he is alert, studies it for the sales ideas it contains

V

And when he is talking with his prospects, the contractor uses the ideas he has culled from the advertising literature

the business as to what is necessary to meet the demands of the time; and it is in those helps that contractor-dealers will find the selling viewpoints which sales experts think will be strongest in their effect on the consumer.

Let us put ourselves in the position of a contractor. His business has fallen off somewhat. He knows that something should be done to build up his sales. Isn't it logical to expect him to study the announcements that are reaching him? From the columns of DOMESTIC ENGINEERING, he learns what other dealers are doing. From the manufacturers' sales helps, he learns what they feel are winning ideas. What are these sales experts saying to him, and to his customers. In those messages, he should expect to find the key to his own selling message.

TODAY'S SALES WEAPONS

Three things are prominent in all these sales messages. The words "New," "Improved," and "Lower Prices" will give the key to much of the present sales effort. These are, largely, the channels along which men who have the selling viewpoint of the manufacturer think it necessary to proceed just now. We have been through a period of great sales effort—when every conceivable sales argument has been used to induce people to buy everything, from frying pans to airplanes. Now we drop back to the old, fundamental, and always interesting (to the consumer) arguments—about things that are new, or improved, and things that are offered at new low price levels.

Let's think, first, of the sales arguments concerning the new and improved products, because they tie in closely with the material we gave in the "Ten Best Prospects" articles. Let us assume that our contractor-dealer does both plumbing and heating. We find a piece of literature on an oil-burning boiler. Naturally, efficiency is the argument made use of in connection with these boilers—an argument that is close to our hearts these days. And the manner in which efficiency is attained by such boilers is admirably summed thus: "The two primary functions of a boiler for oil heating are (1) the extent to which the design and proportions of the fire box can assist the oil burner in attaining the greatest combustion efficiency; (2) the efficiency with which the resulting heat is absorbed or utilized by the boiler."

There is our contractor's sales message neatly put. And, of course, he can best appreciate the details of construction which, in these several oil burning boilers, can be used in his talk with prospects. If he has been alert to developments, he has known that these new oil burning boilers were due; as well as the type in which the burner is an integral part of the boiler. And from our columns, he learns how other dealers are selling oil burning equipment.

And while we're on this subject of automatic heat, a piece of literature reviewed in a recent issue of this paper told of the announcement of a new stoker, designed to handle 950 sq. ft. of radiation, with a multiple feed control which makes it possible for the user to vary the amount of coal from 1 lb. to the maximum of 40 lb. per hour, with a corresponding regulation of the air supply. Something to talk about to the stoker prospect.

IDEAS FOR YOUR CUSTOMERS

Perhaps this contractor-dealer we're talking about knows a good deal about water heaters. But it would be to his advantage to study the review of automatic water heating features as stated by one manufacturer, with the possibility that he might find the description of the safety feature something which could be kept at the back of his head for use in talking automatic water heating to one of his customers—besides various other bits of useful information contained in the same copy.

Then there is this development, in the plumbing field, of the lavatory that is something more than a lavatory. "Boudoir furniture" is the name that is being applied to the various products of this kind, and it puts the lavatory in a new light when the contractor is talking to a woman. "Convenience, style, distinction are all points which appeal strongly to the feminine buyer," says the sales manager of a new line of bathroom "furniture." This gives the contractor something to sell when the appeal of familiar wares is not strong enough to put over the sale.

Our contractor-dealer wants specific information for his selling these days—and the manufacturer knows it. There is the announcement of what is called a "revolutionary principle of oil burning." Then, in one of the new notices, is a compilation of figures of the highest interest — showing how many gallons of hot water the prospect may secure for the expenditure of one dollar. A half hour spent with suggestions of this kind will yield enough "sales conversation" material to last for a much longer time.

A 14-MINUTE SALES TALK

It is not planned to review here announcements of all recent new products. These range from a book about rubber, and another about lead pipe, to water supply systems and plumbing and heating specialties. There is a complete message about a sump pump and the argument—again a timely one—is that it offers pumping efficiency with less power consumption, at "popular prices." It sums up for the contractor-dealer the sales points in fourteen lines—giving "the framework on which to hang a sales talk at least fourteen minutes long," as one contractor put it.

Then there is a very smart and complete description of a very smart line of bath, shower and lavatory fittings. If any contractor-dealer has by this time recognized the fact that the same trend that has made automobiles look so radically different these days, when compared with models of two, three or four years ago, has also hit the field of fittings, then this material should have shown him that he has something in the way of style about which to talk to his customers. "Matched" is the word

(Continued on Page 100)

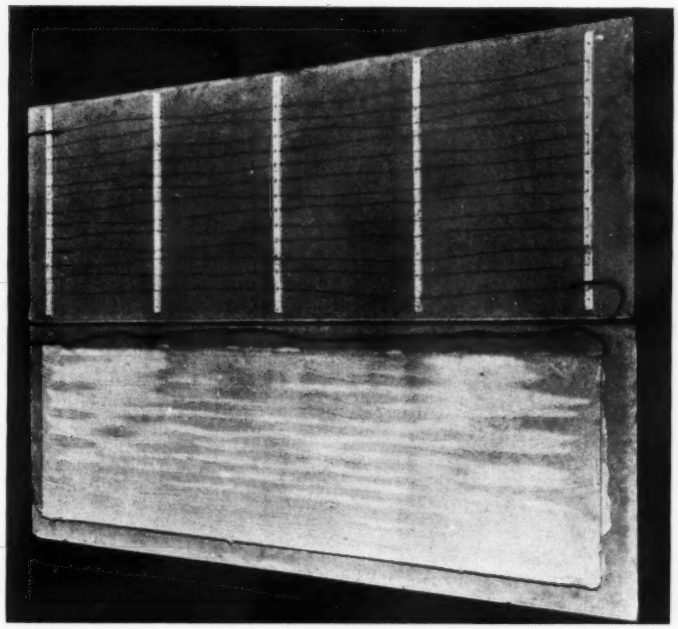


Fig. 1—This shows two of the panel heating units, the upper one before the first coat of plaster was applied and the lower one, after. The mounting board serves as a plaster base

Air at 63 and Walls at 80 Give Comfort in This Panel Heating Job

By . . . . . L. W. Schad*

WHILE a system of obtaining winter comfort with warmed walls had been used in the old Roman Empire, no great amount of progress had been made until A. H. Barker of England started developments about twenty years ago. Panel Heating, as it is now called, is today extensively used in Great Britain.

To explain the operation of this system it might be well to consider for a moment how the body dissipates its waste heat. The chemistry of human life releases energy which is partly used for life processes and activities and is partly dissipated as heat. This dissipated heat amounts to some 400 Btu per hour when the body is engaged in sedentary occupations and of course increases with heavier work. For reference consult "Heat and Moisture Losses from the Human Body and Their Relation to Air Conditioning Problems" by F. C. Houghten, W. W. Teague, W. E. Miller and W. P. Yant (A. S. H. V. E. Transactions Vol. 35, 1929).

The internal temperature of human bodies in health is fairly constant at approximately 99 deg. Fahr., but the outside skin and clothing temperature is lower and varies with conditions. However, as Americans now dress, it is estimated that skin and clothing surface temperatures may average 80 to 85 deg. Fahr., with surrounding air and walls at 70 deg. Fahr. Under such conditions L. B. Aldrich (see Smithsonian Miscellaneous Collections, Vol. 81, No. 6) has found that 46 per cent of the total heat lost from the body is radiated, 30 per cent is convected and 24 per cent disappears as the latent heat to evaporate the moisture from skin and lungs.

It becomes apparent therefore that if it were possible to maintain the wall and ceiling temperatures at 85 deg. Fahr. there would be no heat lost from the body by radiation. To compensate for this effect, convection or moisture evaporation or both would increase to maintain the total heat loss from the body at a more or less constant value as physiologically demanded for health and comfort.

EXPERIMENTAL STUDY MADE

An increase in convection may be effected by lowering the air temperature and in fact such a procedure presents some attractive features.

To make an experimental study of the possibilities involved by these considerations, a trial room was built within one of the standard rooms of the Westinghouse Research Laboratories. This room, a photograph of

*Research Laboratory, Westinghouse Electric & Mfg Co., East Pittsburgh, Pa.

which is shown in Fig. 1, is 9 feet high, 16 feet long and 12 feet wide. Nichrome resistance wire is embedded in the plaster so that the walls and ceiling or any section of them may be warmed at will to any desired temperature by regulating the voltage across the proper units. Each unit, designed for 250 watts at 110 volts, is 4 ft. long and 1½ ft. wide.

The photograph marked Fig. 1 shows two of these units, one before, and the other after the first coat of plaster was applied. After these heaters were nailed to the studding and joist the plastering was finished so as to leave smooth inside surfaces.

The room is provided with a very flexible ventilating system permitting an air intake from the main laboratory air conditioning plant or directly from outdoors. As a usual thing the air enters the room through the central duct shown in the photograph and Fig. 2, and is directed horizontally about one inch below the ceiling toward both sides of the room. The two outlets are placed one on each side of the room near the floor and are 20 in. long and 6½ in. high. By the adjustment of suitable valves and dampers the air flow can be controlled or reversed.

HEATING AND COOLING FOR TEST ROOM

The laboratory within which the experimental room was built is 16 ft. by 20 ft. by 12 ft. high so that there is a 16- to 24-in. air space between the walls and ceilings of the two rooms. During cold weather this space can be heated or cooled according to the demands of any particular line of investigation.

Wall temperatures are read with copper-advance thermocouples soldered to a patch of 50 mesh copper screen just under the finish coat of plaster. Leads from the hot junction are taken out on isothermal surfaces to the edge of a heater unit where they are then brought through to the outside of the room and connected to a multiple thermocouple switch. There are 33 of these couples distributed over the room surfaces giving a fairly good average determination of wall and ceiling temperatures.

True room air temperatures are read with No. 36 copper-advance thermocouples, placed so as to get an average indication as well as variations in temperature from place to place.

These small wire thermocouples indicate the room air temperature fairly accurately regardless of the wall temperature. The principle involved is illustrated in Fig. 4 which shows convection from cylinders to be a function of the diameter while radiation remains constant for all diameters. Where wall temperature differs appreciably from that of the air a small wire thermocouple would therefore indicate the air temperature more accurately than a mercury thermometer unless the latter were placed in a forced stream of air or surrounded with radiation screens. For the same reason a mercury thermometer would not indicate the temperature of a larger cylinder. As specific examples assume a wall temperature of 90 deg. Fahr. and an air temperature of 50 deg. Fahr. A cylinder about the size of a human body would have a temperature of 74 deg. Fahr., a mercury thermometer would indicate its own temperature at about 62 deg. Fahr. while a No. 36 thermocouple wire would indicate the air temperature within a degree if it were painted black and to better than that as an actuality since its surface is metallic and therefore a poor absorber of radiant energy.

The experimental room was ready for operation February 1, 1932, but the extremely mild weather that had prevailed during the winter continued until March, during which month there was sufficient cold weather to provide the necessary conditions for some preliminary work.

The minimum air temperature allowable with radiation from the body prevented was the first point of interest. There is no way of knowing accurately the required enclosure temperature, but as stated previously, it is probable that with walls and ceiling averaging 80 to 85 deg. Fahr. there would be but little if any heat lost by radiation from the human body normally clothed.

The power was therefore applied equally on walls and ceiling and regulated until their average temperature was maintained constant at 80 deg. Fahr. Air was drawn in directly from an 18 deg. Fahr. outdoors at a gradually increasing rate until a slight sensation of chilliness was experienced by the observers. Readings were then taken

Fig. 2—Here is the room in which the panel heating work was carried on. The dropped section in the ceiling between the two lights serves as one of the ventilating openings

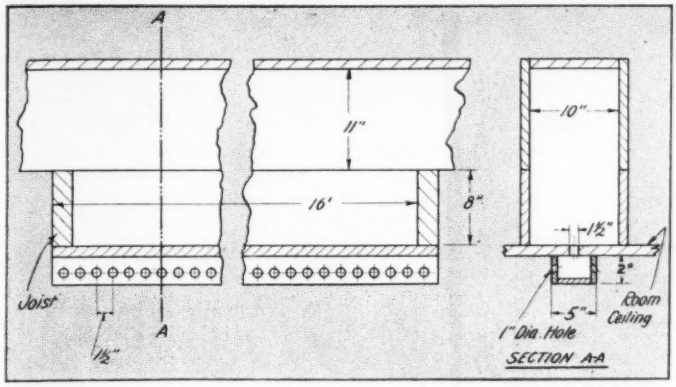


Fig. 3—This is a detail of the ventilating ductwork and openings built into the ceiling shown in Fig. 2. Note that in the room, only the lower part containing the openings is visible

of air temperature and air movement in various parts of the room. Following this procedure it was found that 80 deg. Fahr. walls and ceiling and 63 deg. Fahr. air was definitely comfortable while 60 deg. Fahr. air with other conditions the same was not quite as satisfactory, although about 50 per cent of the observers found it quite agreeable, especially in portions of the room free from noticeable drafts.

Drafts were at first very troublesome and although somewhat reduced later were not completely eliminated. Uniform air velocities from ceiling to floor over the entire room would have meant an air velocity of only one foot per minute.

Another point of immediate interest was the heat distribution over walls and ceiling for maximum efficiency and convenience compatible with comfort. It is quite apparent that as the ratio of heated area to total area is decreased the temperature of the heated portions must be increased. There are many details to be considered in connection with optimum size and position of heated surfaces.

Warm panels in the side walls might in general be objectionable on account of picture hanging, furniture arrangement, etc. However, panels in specific parts of the side wall might be advantageous. For instance, heater panels under windows would tend to create upward currents of air which would be more or less counterbalanced by a tendency toward downward air currents set up by the cold window. Thus with the proper balance drafts would be eliminated. In addition these low panels would radiate directly toward the occupants' feet and legs, creating a more comfortable condition than with all the heat supplied from the ceiling.

In a well insulated house, weatherstripped and otherwise provided with barriers to air infiltration there is not likely to be more than one or two air changes per hour. In such a case it is useless to suppose that the air temperature will differ much from the average wall and ceiling temperature, but the average wall and ceiling temperature will be lower than that of the heated portion or panels. If all the heat is supplied at the lower part of the side walls, it is quite possible that the air will be warmer than the walls and we have nothing much different from a low temperature convection heater. If heated side wall panels are placed only under windows the additional heat that may be required can be supplied from ceiling panels and the result will be a combination of low temperature radiation and convection. With all the heat supplied from the ceiling there will be very little convection, although as the radiant energy is absorbed by floor and walls it will be given back partially to the air in contact with them and this air becoming warmer will set up slow convection movements.

The power requirements will depend upon climate conditions, insulation and number of air changes desired. Calculations for Pittsburgh with an average outside winter temperature of 40 deg. Fahr. showed a power consumption of 750 watt-hours per cu. ft. of heated space per heating season of 212 days (Oct. 1 to May 1) for warming the air to 68 deg. Fahr. with one air change per hour. In addition there will be thermal leakage through the outside enclosures of the house, the amount of which will depend upon to what extent the house is thermally insulated. It is estimated that in a well insulated house the total power requirements might be as low as one kilo-

(Continued on Page 108)

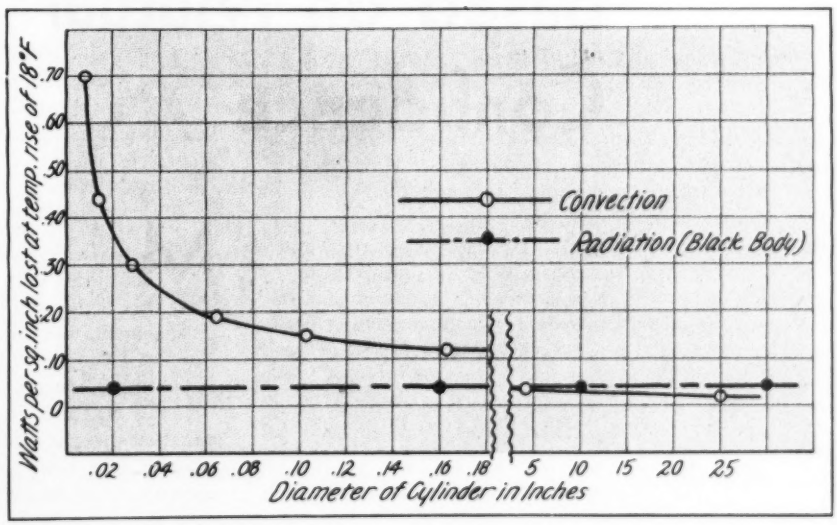


Fig. 4—This shows that convection from cylinders is a function of the diameter while radiation per unit of area is a constant for all diameters

PLUMBING CONTRACTOR
Ask Your
Plumbing Contractor
About GAS Appliances
Your plumbing contractor is a progressive merchant as well as a reliable service engineer. His wide experience installing GAS appliances has made him an expert in selecting and recommending the type of appliances suited for your particular needs. Whether it is a GAS Storage Water Heater, Automatic GAS Range, Automatic GAS Refrigerator, or a complete GAS house heating system, he is licensed to furnish and instal equipment which will give the best of service for many years to come. See the modern GAS Appliances on display. Let us explain how their many new improvements will save you money, time and simplify your housework.
The Harrisburg Gas Co.
Or
See Your Plumber
GAS IS ECONOMICAL, CLEAN, SPEEDY AT ALL

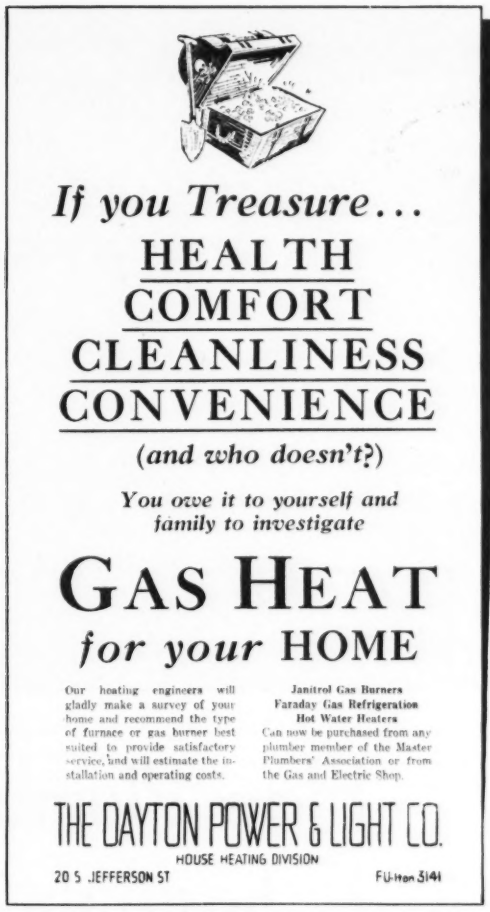
This type of copy wins friends for the master plumber—even manufacturers of plumbing ware might adopt it with profit

Co-operation with Utilities in Two Cities Based on Mutual Confidence . . .

The two examples of utility and master plumber co-operation here outlined show what can be done where there is a willingness to find an equitable meeting ground for both parties to the deal

MUCH of the success of any cooperative effort between master plumber groups and public utilities will be based upon mutual confidence. That this highly important ingredient is included in the arrangements now in operation in Harrisburg, Pa., and Dayton, Ohio, is indicated by the friendly feeling between those concerned in these two cities.

James H. Lutz, Jr., of Harrisburg, Pa., finds that the situation there is quite satisfactory to the plumbing contractors. The Harrisburg Gas Company's policy contains eleven provisions or principles under which three sales


If you Treasure...
HEALTH
COMFORT
CLEANLINESS
CONVENIENCE
(and who doesn't?)
You owe it to yourself and family to investigate
GAS HEAT
for your HOME
Our heating engineers will gladly make a survey of your home and recommend the type of furnace or gas burner best suited to provide satisfactory service, and will estimate the installation and operating costs.
Janitrol Gas Burners
Faraday Gas Refrigeration
Hot Water Heaters
Can now be purchased from any plumber member of the Master Plumbers' Association or from the Gas and Electric Shop.
THE DAYTON POWER & LIGHT CO.
HOUSE HEATING DIVISION
20 S. JEFFERSON ST
FUlton 3141

In addition to the reference to members of the local association, this company agrees to run ads occasionally carrying names and addresses

plans, each giving the plumbing contractor an equal position with the gas company, are available.

The newspaper advertisement of the Harrisburg Gas Company, which is reproduced in these pages, is a particularly fine example of the type of copy which it would seem that not only the utility company, but the manufacturer of staple plumbing ware, desiring active cooperation on the part of the master plumber, should use and could use with great profit.

H. S. Blank of the Blank Plumbing & Engineering Co., Dayton, Ohio, reports a satisfactory situation in his city also. One interesting side-light of the working of the arrangements there Mr. Blank indicates when he says: "We have taken in two new members into the association and this agreement had some bearing on their coming in with us."

The Dayton Power & Light Company's policy contains eight principles with attached sheets covering discounts, commissions and installation fees. Provision is made to protect the plumber in the case of prospects he is contacting. He merely lists his prospect with the company and if sold by a salesman of the utility within sixty days the contractor receives a flat fee providing for the installation costs and commission.

One of the Dayton Power & Light Company newspaper advertisements is reproduced and the last paragraph, carrying the reference to the master plumbers association, appears in all such ads.

In the case of the Harrisburg Gas Company, a special sales representative has been given the sole duty of contacting with cooperating master plumbers to furnish them with all sales helps needed. Letters, broadsides and other merchandising material is made available to the cooperating contractors to tie in with the company's own campaigns.

STATEMENTS OF POLICY

Clauses in each statement of policy seem to indicate that the utility companies will not take on any exclusive gas appliance, thus making it possible for the contractor to sell other makes of such appliances and still take advantage of the agreement. This is one of the points over which there has been a variance of opinion in the past between contractors and utility companies.

An interesting provision in the Harrisburg statement of policy indicates that the company, in rendering combination bills, clearly separates the amount due for merchandise sold from the amount due for utility service.

In the Dayton statement of policy, the company agrees to carry from time to time advertisements which will feature the names, addresses and telephone numbers of members of the association, who are cooperating under the agreement. When the Dayton agreement was entered into it was definitely hoped that a little later a closely knit association, similar to one in the electrical field, might be formed to carry out a promotional program intended to create additional business and "to establish in the minds of the public the advantage of having their plumbing work taken care of by members of the association."

In both agreements there is a recognition of the need

(Continued on Page 110)

Fig. 1—This view shows the drainage arrangements for the three compartments shown at the right in Fig. 2

How Plumbing Makes for Efficiency In Institutional Kitchen

By R. M. STARBUCK

THE kitchen is the vital spot in the affairs of any building which houses and cares for any considerable number of people. It is the vital spot whether one is speaking of an old people's home or a children's hospital.

Right in this one department more things can happen to make or mar the health and happiness of the inmates than anywhere else. And so it goes without saying that whatever can be done to increase the efficiency and the effectiveness of the program that the institutional kitchen must follow, ought of necessity to be done.

Recently we saw in the course of construction the plumbing for the kitchen of a large institution, and were particularly struck, not so much with the regular kitchen layout, as with some of the features that were of an accessory nature, as shown in the simple floor plan that appears in Fig. 2.

The area shown in the floor plan is outside the kitchen but adjacent to it. As will be seen, it is in the nature of a workroom.

In Fig. 1 is to be seen a picture of the drainage arrangements for the three compartments shown at the right in Fig. 2—the garbage room, vegetable room and vegetable preparation room.

The picture was taken before the work had been completed. The waste connection from the three sinks in the vegetable preparation room remain to be connected into the hub which has been left for that purpose.

Each of the floor drains is provided with a cleanout, accessible from the basement.

Fig. 2 shows a fish sink and a meat sink. A grease trap is used in connection with these two sinks. However, no such trap is used in connection with the three vegetable preparation sinks, and it is good judgment to use the grease trap in one case and not in the other. The idea of course is that no grease is produced in the use of the vegetable sinks, and therefore it would be useless to use a grease trap.

CLEANOUTS FOR VEGETABLE SINKS

The danger in the use of vegetable sinks comes from the possibility that sand will enter the drainage line. Because of this danger we think the use of the cleanouts on the drain traps is advisable, although under general drainage conditions, the use of cleanouts should be reduced to a minimum.

The use of some of the six floor drains shown in Fig. 1 appears to us to be somewhat questionable.

In our opinion many a floor drain is installed that never has any work to perform, and therefore often remains permanently without a trap seal. This of course allows the admission of sewer air through each such trap. If this should happen in connection with any of the floor drains shown in Fig. 1, the danger would be greatly increased, for here the drain air would be entering a room in which food is stored or prepared.

Often, however, practices that might be objectionable or even dangerous in private homes, would be legitimate in institutional buildings, public buildings, etc., for such buildings will generally have a superintendent and helpers whose duty it is to look after many things that would not enter into the daily program of a private home.

Thus in the case of Fig. 2, we presume that the cleaning and washing out of these compartments would come into the daily routine of the caretakers.

Each of the rooms or compartments is tiled far up on the side walls, and washing them out would be an easy thing.

INDIRECT CONNECTIONS FOR FLOOR DRAINS

As a matter of fact however, we seriously question whether it would not be much safer to give these six floor drains an indirect connection, rather than to leave any possibility of contamination from sewer and drain air, through the direct connections as here shown.

Practically all plumbing codes demand indirect connections for refrigerators, and this requirement is solely for the purpose of avoiding every possible chance of entrance of sewer and drain air into the receptacle used for storing food and drink.

Certainly each one of these floor drains should be water-supplied, but here again the human equation has to be taken into account. Failure to renew the seals of these traps over a considerable period of time might easily result in an unsanitary condition.

Self-priming devices are sometimes used, whereby at intervals a few drops of water discharge into the traps.

We would like to know what the general opinion is concerning the connections shown in Fig. 1, whether they are to be considered absolutely safe and sanitary, or whether some form of indirect connection should be used.

A QUESTION IS ASKED

At the rear of the basement space shown in Fig. 1 will be noted a square opening. This is the opening into a concrete pipe tunnel, a feature which is of sufficient interest to warrant a brief description.

The hot water supply and the heating lines for all the buildings included in this institution, are generated in the power house, which is located at the extreme lower end of the grounds, and together with the cold water lines, are carried in mains which run in a concrete trench or tunnel. Branches to various buildings are taken off these mains.

In the case of at least three of the institution's buildings, these supply and heating mains are carried directly through them, at the same level as in the tunnel. In this case the tunnel ends at the foundation wall at one end of the building, and begins again at the opposite end of the building.

Manholes wherever connections are taken off, make the pipe lines easily accessible in the event of repairs or the closing off of buildings.

Eventually, when all of the buildings of this institution have been erected, the pipe tunnel will be about one mile in length. The hot water main is of 6-in. diameter, and the return main of 3-in. diameter.

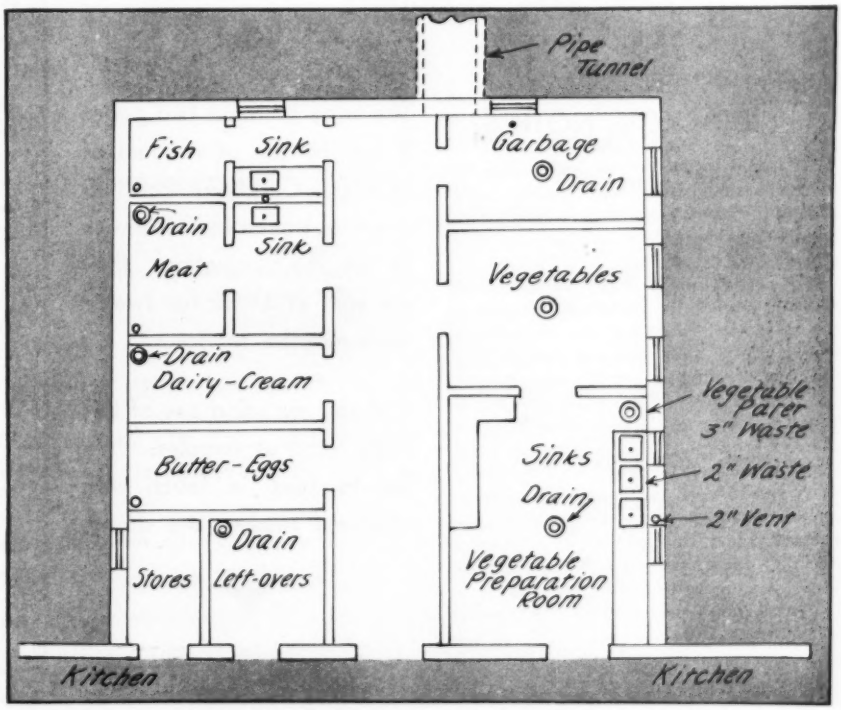


Fig. 2—Here is the lay-out for the kitchen of a large institution. The features, which are of an accessory nature, are particularly noteworthy

Visitors—and Plumbing Equipment

PRIDE in the home is the basis of many worthwhile possessions in life—and pride in the home is, of course, based on the comfort and conveniences it affords the family and the family's guests. Of these conveniences, none is so basic as plumbing equipment, serving as it does both comfort and health. Now that we are entertaining so much more in the home, the plumbing equipment should be looked over with a critical eye, so that it will match the furnishings of the rest of the house. Just telephone for a free inspection.

(In this space Your Name, Etc.)

A single-column plumbing ad

My Dear Madam:

The guest's opinion of the home is formed, not so much by the efforts made on any particular occasion in the way of entertainment, but on the impression of the details of the furnishings throughout the home. The impression created by a charming living room may be somewhat dimmed by that which is made by an old-fashioned kitchen which has never been brought into harmony with the rest of the house—or by a bathroom which is obviously quite out of date.

Yet, more and more attention has been paid to beautifying these two very important rooms. Color has been introduced into plumbing fixtures. And designers have altered the lines so that one may have fixtures that will fit into the most modern of surroundings.

It is not always necessary, however, to replace fixtures in order to add the harmonizing note. In the bathroom, for example, a colored toilet seat, colored shower curtains and a renewal of the fittings on lavatory and tub will do much to introduce a note of absolute newness, at small cost. Also in the kitchen, where a satisfactory sink may be "dressed up" a bit with a new swinging spout faucet in bright chromium—an added convenience, by the way, for the housewife.

May we suggest a visit to our display room to look over fixtures or accessories, whichever you think would be sufficient to bring a note of freshness to your own kitchen or bathroom?

Very truly yours,
HARRY BROWN

A plumbing sales letter

WHEN FRIENDS SAY "DID YOU NOTICE?"

"It would be interesting, sometimes, to be a mouse," says Harry Brown, local plumbing contractor, "and to hear what our friends say about our homes after they've paid us a visit.

"Of course, none of us wants to be sharply critical, or anything like that—but we do take notice of the furnishings—particularly the attention that is paid to details—when we visit with people. In my own case I naturally notice it when plumbing equipment doesn't match the rest of a finely furnished house. And I'm convinced that others do, too. It is easy, and inexpensive, with the fine modern accessories—chromium fittings for bath, lavatory or sink—color in shower curtains and toilet seats—to add a note of newness to bathroom or kitchen.

"These may seem details, but you'll find they're the sort of details people remember."

Hand this publicity item to your newspaper

The copy on these two pages is for the use of readers of DOMESTIC ENGINEERING—without charge. If you wish to use the illustrations, they are sold at $4.20 for twelve—six months' service.

If you are using any of this copy, send us samples. We like to keep in touch with what our readers are doing.

In 1933

"Spend for the Home"

Home, they used to say, was a place to go to when you'd been every place else. That isn't so now—we're making our homes the center of our social life under present conditions. And we want to have pride in our home furnishings, of course. Particularly in the essential rooms of the house do we want good looking and efficient equipment—in kitchen and bathroom. Even the replacement of accessories with modern equipment would do much to give a note of newness to the fixtures already there. Drop in and see our display—and in 1933 Spend for the Home.

(In this space Your Name, Etc.)

A single-column plumbing ad

SERVICE

My Dear Sir:

The economical use of fuel is a matter of importance just now--and it is a business problem to be solved like any other similar problem. It requires an investment, often, to make substantial savings in the business world. We don't recognize this fact enough in our home affairs.

You have a heating plant now. It has served you for some time, and doubtless it has served you with some degree of efficiency. Yet we know, and you know, that if that heating plant is not automatically controlled there is a wastage of fuel. The heating plant that is manually controlled cannot be efficiently controlled. The temperature will fall too low before attention is given the plant; and it will be too high before it is again checked.

The result is a too great fluctuation in temperature, a need for forcing the plant to get up heat when it is needed, and a wastage when the temperature has gone too high and windows or doors must be opened in order to cool off the house.

But automatic controls will keep a temperature almost level, with small fluctuations. The rate of firing will be more uniform, and the strain on the heating plant of great ranges in fire temperatures will be eliminated. The result will be fuel savings--and those fuel savings will be the return on your investment for automatic control or, if you desire the fully automatic heating plant, the return on the investment for automatic fuel feeding, whatever the fuel.

We'd like very much to talk the matter over with you fully. Just telephone and we'll meet your convenience.

Very truly yours,
HARRY BROWN

A heating sales letter

For 1933—Let's Spend for the Home

It's the sanest advice a man can take—or find—these days. The home has assumed a new importance in our lives. We're doing more entertaining there. We are away from it less. By spending for the home we assure ourselves comfort and convenience, make work, save money when we replace worn-out equipment and offer our friends a better brand of hospitality. Spend for the Home this year—it will be an investment in happiness.

(In this space, Your Name, Etc.)

For newspaper ad or blotter copy on heating

Note how the copy on each of these two pages dovetails. The ad copy, the sales letter, the publicity item—in each case they help each other. Use them in your efforts—and send us copies.

INVESTING FOR ECONOMY IN THE HOME

"The home is a small business institution," says Harry Brown, local heating contractor, "and equipment for use in the home should be regarded in the same light as an investment in equipment for business purposes.

"Take the matter of automatic heat control. If the home doesn't have it, it's a certainty that in any one heating season the fuel bill will be higher than it would be if there was automatic control. With such equipment, there is less fluctuation in temperature, the heating plant does not have to stand the strain of a big range in fire temperature, and there is much less need of attention.

"Besides, rooms remain at a nearly level temperature and colds will be fewer. But the main point of interest, for me, is that fuel savings will do their part in making a return on the investment for the necessary equipment to secure automatic control. And I see no difference between such an investment and one that enables a factory to produce more in less time."

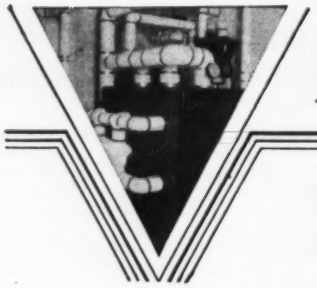
A piece of heating publicity

The Comfort of Controlled Heat

WHEN you settle down for the evening with your cigar and your paper—or with friends for an evening of cards—it will be a distinct comfort to know that you will not have to be rushing into the basement every little while to send up more heat, or to check the heating plant. Besides, automatic control means economy in the use of fuel. We'll be glad to have a competent man call on you at your convenience to talk the matter over with you, and to examine your heating plant with a view to bringing it up to date with complete automatic controls. Just telephone.

(In this space Your Name, Etc.)

A single-column heating ad



ANSWERED

QUESTIONS FROM OUR READERS AND ANSWERS BY OUR ENGINEERS

A Faulty Hot Water Heating System

TO THE EDITOR:

I am writing to you to get some information on a hot water heating job.

Herewith you will find sketch (Fig. 1) of the job as I found it. I was called in to repair a leak in the boiler and also to try and find out why the job did not heat properly. Does tying the ends of the mains together and also the ends of the returns together help

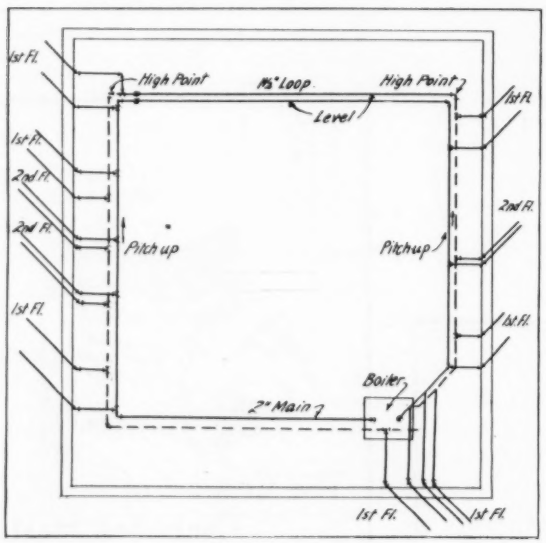


Fig. 1

the job. I have installed a good many jobs in my time and have seen a good many others but have not seen any like this one. I have talked with a good many heating men and they have never seen one like it.

New York. W. M.

TO THE READER:

The pipe lines which connect the heater of a hot water system to the several radiators may be arranged in many ways and still give satisfactory service. However, there are some ways in which a heating system should not be piped and you have encountered one of these latter cases.

For your general information, we show in Fig. 2, six different ways to connect a two story hot water heating job. C and D of Fig. 2 show an overhead distribution system in which the principal horizontal flow pipes are above the highest tier of radiators. An underfoot distribution system is shown in A, B, E and F of Fig. 2 and here the principal horizontal flow and return mains are below the lowest tier of radiators.

D, E and F show a two pipe system in which the water coming from the heater flows only through one radiator before it is returned to the heater.

A one pipe system as regards radiators is one in which the water coming from the heater flows through more than one radiator before it is returned to the heater. This is illustrated in A, B and C. A one pipe as regards pipe lines, is one in which the pipe line is the supply line for one radiator and the return line is another. This also is illustrated by A, B and C.

A direct return system is a two pipe system in which the water returns from the radiator to the heater in a direct path so that the radiator nearest the heater has the shortest supply line and also the shortest return line. (See E of Fig. 2.) A reversed return system is a two pipe system in which the radiator nearest the heater has the shortest supply line and the longest return line. (See B of Fig. 2.) In this system the total length of

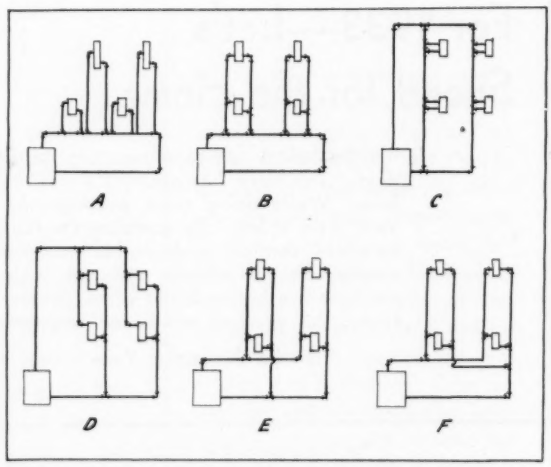


Fig. 2

the circuits for the several radiators on one floor are practically equal and it is easier to arrange the pipe so as to have equal friction heads in all radiator circuits than it is in the case of direct return systems. The system which you have encountered is based on the direct

return principle and, as pointed out here, the radiators nearest the boiler will heat first while the radiators farthest from the boiler will be the last to heat. This alone may cause the system to prove unsatisfactory. With a reversed return system, each group of radiators has exactly the same length of water travel, and hence the resistance to be overcome is practically the same

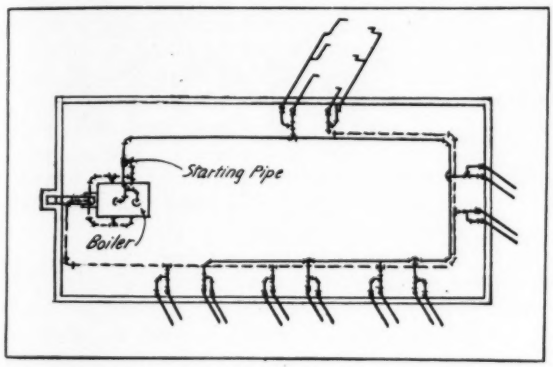


Fig. 3

irrespective of the distance of the radiator group from the boiler.

Fig. 3 is submitted as another typical example of a reversed return applied to a two pipe up-feed system.

The 1½-in. loops on your job which connect the two sides of your system do not serve any good purpose.

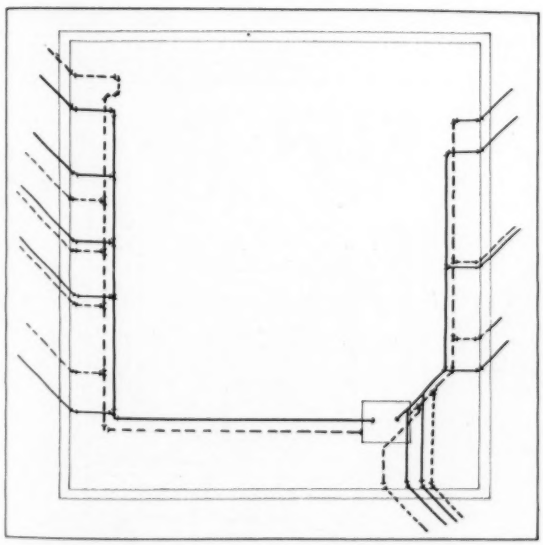


Fig. 4

There are several possibilities here for connecting the job. First, the loops can be removed as indicated by our drawing marked Fig. 4. By connecting the ends of the supply mains, the forces of gravity circulation oppose each other. In order to obtain circulation, there must be a complete circuit and no opposing forces other than friction which is reduced to a minimum by the correct sizing of the supply and return line. When you consider your two mains alone, the ends of which are looped together, you will be able to recognize readily that when heated water rises out of the right side of the boiler, it starts down the right side of the loop and at the same time heated water with an equal force is rising out of the left hand side of the boiler to travel around the left hand part of the loop. The result is that these two forces act against each other and there is no circulation. The experience of the owner must be that the radiators next to the boiler get a small measure of heat, whereas the radiators farthest from the boiler are usually, if not almost always, cold. By breaking the loop and considering, say, the left hand circuit alone, you will note that the heated water will rise out of the boiler and follow through the supply mains, portions of it going to the radiator branches along the line. At the end of the main the heated water rises to the last radiator and then goes down into the return where it goes back to the boiler, thus making a complete circuit in one direction.

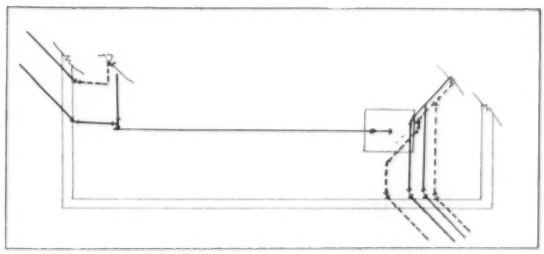


Fig. 5

In order to overcome the disadvantage of using the direct return system, it may be necessary to install an electric pump for forcing the circulation. However, the system could be made a reverse return one by changing the return connections of the radiators so that they would enter the supply line. Then, the return would serve only the end of the main. In this case, the pitch of the main would be down from the boiler instead of up as you show it. The return would be pitched down to the boiler, as it now is.

Your sketch indicates that the first floor radiator nearest the boiler has a supply from the right hand main and a return into the left hand return. This should be changed so that the return of the radiator will enter the right hand return.

Your system could be changed so as to approximate that which is shown by our typical installation in Fig. 3. This would require that you pipe the job as indicated in Fig. 5.

"Job Is Working Fine"

In regard to my recent inquiry concerning a faulty hot water heating system, will state that the job is working fine.

I had already taken out the loop before I received your answer to my inquiry.

When the loop was in we could not get the temperature of the water above 130 deg. Fahr. at the boiler. After the loop was out we were able to run the temperature up to 180 deg. Fahr. without much trouble. Friday, December 16, at eight o'clock in the morning it was 8 deg. below zero and it was around zero the rest of the day, that is outside.

The temperature in the living room where the thermometer was, stood at 72 deg. Fahr. all day with the boiler checked off.

We are changing the job from an open system to a closed one and we are putting about 6 lb. more pressure on it.

My customer has two other houses. The piping in them is the same as in the first. He has had trouble with all three with the result that we have the job of making the same changes in the other two houses.

New York. W. M.

Information About Dust Removal by Air Filters

TO THE EDITOR:

We would like to get the following information about air conditioning systems:

1. What is the maximum efficiency of percentage in dirt removal that the most efficient machines now on the market possess, and at what velocity of air going through the machine does this maximum efficiency take place?

2. What is the relation between the percentage of purification or removal of dirt from the air and the velocity of air through the machine? In other words, if at 1 cu. ft. per second, 70 per cent of the dirt is removed, how much dirt is removed at 2 cu. ft. per second?

3. Is there any figure which is used as a standard by machines governing the above factors?

4. Is there any relation between the purity of the air exhausted from the machine to the percentage of dirt contained in the air as it is drawn into the machine, i. e., if the air drawn into the machine contains ½ ounce of dirt per cu. ft. of air, and this air as expelled has 1/100 of an ounce per cu. ft., would this same purification exist, if the amount of dirt contained in the air drawn into the machine were double?

New York. K. F. H.

TO THE READER:

Some of the dust quantities mentioned in the preceding letter are much higher than will be encountered in the atmosphere, and they would place some of the questions in the field of industrial dust arresting. We assume, however, that these figures were given as examples only and that it is the reader's intention to obtain information on the cleaning of atmospheric air.

1. Assuming that correspondent refers to air filters of the viscous or dry type, when speaking of "machines for dirt removal," the maximum efficiency in dust removal that can be obtained with present day air filters is about 98 per cent, which can be raised with special equipment and at some expense to 99 per cent. This percentage of removal refers to objectionable dust which is above the region of smoke and within the field in which air filters usually operate.

The air velocity through the filter depends entirely on the type of medium used, and ranges from 25 f. p. m. for cotton and paper mat filters, and up to 500 f. p. m. for viscous automatic filters. The maximum cleaning efficiency is obtained at the rated capacity of the filter, which is based on the above velocities in feet per minute.

2. The efficiency in dust removal varies with the velocity through the filter and is high at very low velocities (below 10 to 15 f. p. m.). At a velocity of about 25 to 30 f. p. m. a minimum is reached, and at higher velocities the cleaning efficiency goes up rapidly, approaching the maximum of 97 to 98 per cent at about 70 per cent of the rated capacity.

3. Standard velocities for commercial air filters are mentioned in the answer to question 1. One manufacturing concern lists the velocities of its filters as follows: Airmat dry type filters, 50 f. p. m.; unit type filters, 360 f. p. m.; automatic filters, 500 f. p. m.

4. If the amount of dust contained in the air increases, the efficiency in percentage increases also. The actual amount of dust contained in the clean air would not remain the same but would increase in efficiency. If, for instance, 100 grains are contained in the air entering the filter, the efficiency is 98 per cent, 2 grains would be left in the clean air. If the amount of dust should be increased to 1000 grains, the efficiency would go up to 99.5 per cent, but the amount of dust remaining in the air would be 5 grains as compared to 2 grains previously.

How Many Different Types of Traps Are There?

TO THE EDITOR:

In a recent plumbing test I was asked to give the names of traps used on plumbing systems. I named the

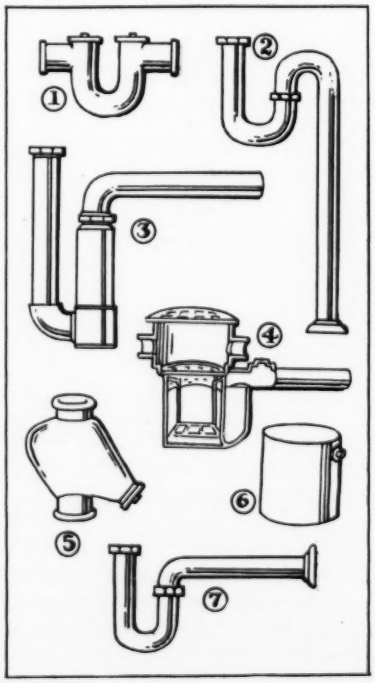


Fig. 1

IT STANDS ALONE

in its

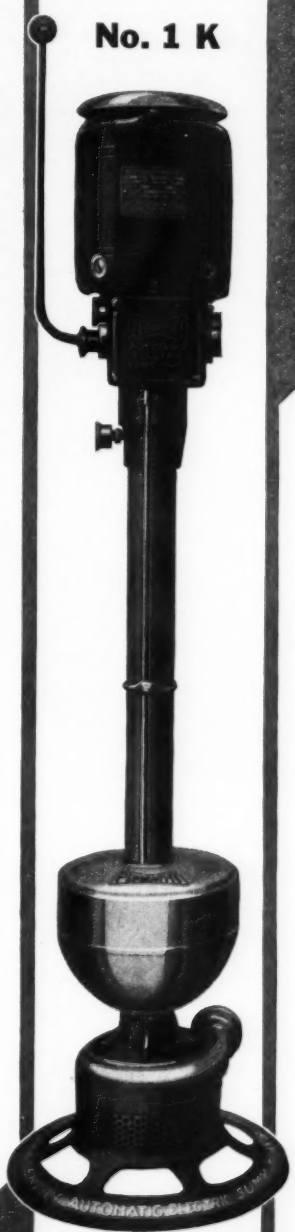
excellence of design

quality of materials

high grade workmanship

performance

dollar value



LIST PRICE

$65.00

¼ h. p. repulsion-induction motor. Maximum capacity 3600 gal. per hour.

PENBERTHY PRODUCTS

If you will examine the Penberthy Model K Sump Pumps and make your own comparisons, you will invariably come to the conclusion that these Model K Pumps have no close rivals—that they stand alone.

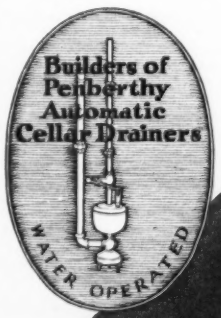
Limited space does not permit listing all features of these Model K Pumps, but your attention is directed particularly to the following:

1. Rustproof because of copper and bronze construction throughout.
2. Exceptionally rugged ¼ h.p. repulsion-induction motor having ball thrust bearing for vertical operation.
3. Circuit breaker that protects motor against damage from overloading or improper voltage.
4. Mercury switch that assures dependable operation.

Penberthy Model K Automatic Electric Sump Pumps are made in five sizes for any sump depth up to 8 feet 6 inches. They are carried in stock by jobbers everywhere.

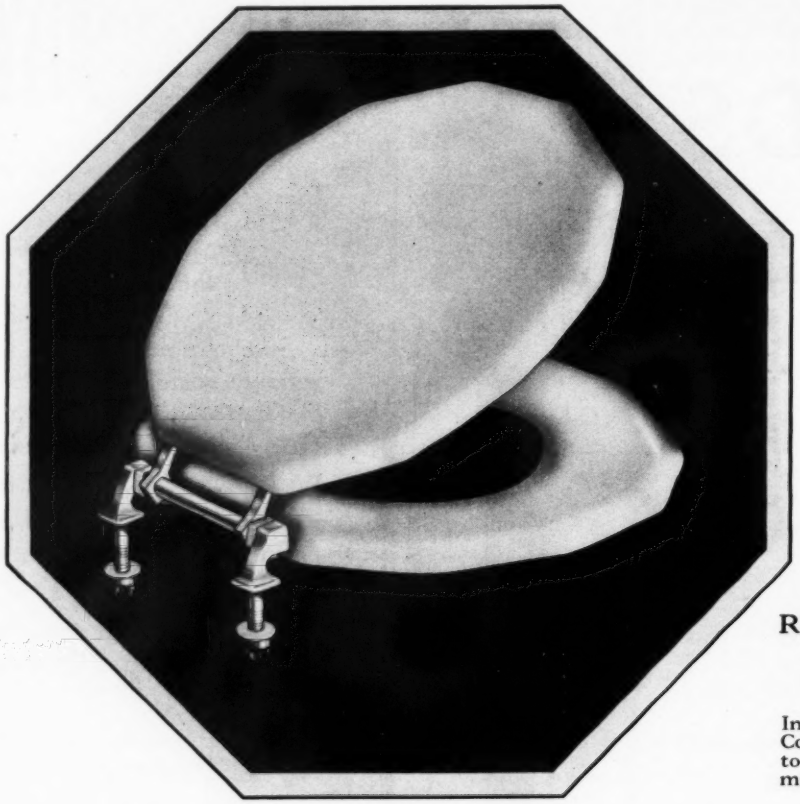
PENBERTHY INJECTOR CO.

Established in 1886 **DETROIT** Canadian Plant Windsor, Ont.



COPPER AND BRONZE THROUGHOUT

PENBERTHY SUMP PUMPS



RETAIL PRICE

$4.50

In White and Colors. Colonial Hinge, colored to match seat, Chromium or Nickel Plated.

A New Year » » » » »
A New Opportunity!

A New Year . . . . A New Miller Seat, The Colonial 1400 . . . . a new opportunity to present to your customers a toilet seat that will meet with enthusiastic reception, both from the angle of beauty of appearance and economy in price.

This new seat is furnished in white and colors and has the exclusive Du Lux finish, a high luster finish specially developed for Miller Seats, which assures outstanding beauty and long life.

Equipped with the ORIGINAL Miller Colonial Hinge, which can now be furnished in the same color and beautiful finish as the seat, at no additional cost. Also in Chromium or Nickel Plated.

Ask your jobber's salesman about this new seat. See it. Display it. Watch it click with your prospects.

CHAS. A. MILLER CO., STURGIS, MICH.

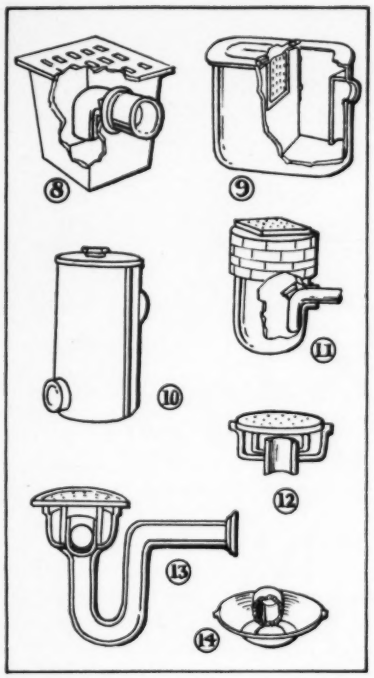


Fig. 2

¾-S, ½-S, full S, grease trap, running trap, house trap, etc., but I don't think I received a full mark on this question as I was talking it over with one of the other boys who took it and he named quite a few more that I have never come in contact with. It says in "Starbuck's Plumbing" that all traps are derived from the S trap and the drum trap. I would like to have you send me a list of all traps and their use in plumbing.

Massachusetts. R. B. J.

TO THE READER:

There are a large number of styles and varieties of traps used in plumbing. But as you state, in quoting Starbuck's Modern Plumbing, the S trap and the drum trap may be considered as the fundamental forms of traps, all other traps now in use being based upon one or the other in their operation. Accordingly, if you quoted this in your reply, we do not see but what you should receive full credit for the answer unless you were specifically requested to enumerate the different variations which are now common.

Here is a list of 14 different types of traps which have been developed for specialized applications:

Drum trap	Catchbasin
Running trap	Cesspool
P trap or bath traps or ½-S	Grease trap
S trap; ½-S; ¾-S	Gasoline and oil trap
Back water trap	Hair trap
Bell trap	Plaster or sand trap
Bottle trap	Refrigerator trap
Anti siphon P trap	

While this list could be enlarged upon, it will meet your present problem. The important thing to keep in mind is the fundamental purpose of a trap and what all traps are derived from, namely the S and drum traps.

Can You Answer These Questions?

A Question and Its Answer

The following question was asked in the November issue, and the following answer is by a reader:

In the case of a range boiler connected to a water back in a kitchen stove how would you install a small gas heater on the side of the boiler and what connections would you use?

THERE are several ways in which a small gas heater may be installed on the side of a range boiler and the chief matters to be kept in mind are that the gas heater should circulate without interfering with the circulation to the stove and also without having the stove circulation interfere with that of the gas heater; another point is that the gas heater should be so connected that it will be able to supply a small quantity of hot water as soon as possible, after being lit, without the necessity of heating up the entire tank.

For a great many years the so-called quick heating connection was considered as almost the ideal way to connect up such heaters and this connection was made up by taking the supply water for the gas heater from the drain connection on the bottom of the tank and in having the heated water from the gas heater enter the hot water supply pipe to the building at a point immediately above the top of the boiler as indicated on the sketch shown in Fig. 1. In this case the water from the bottom connection on the tank drops down to the tee, one outlet of which goes to the water back in the stove and the other outlet of which goes to the gas heater supply and to the drain cock. When the stove is heating the water alone the water simply all turns at this tee and goes over to the stove coil; when the gas heater is operating and the stove fire is out, the water turns in the opposite direction toward the gas heater, while if both stove and heater are in operation the water splits at the tee and part circulates to the inlet of each apparatus.

On the outlet of the gas heater it will be seen that the heated water enters the tank through the top hot water outlet and has no connection with the line from the stove water back which enters through the regular connection on the side of the boiler about half way down from the top. In this way there is no conflict between the incoming heated water from the stove and from the heater. The reason that the stove is not provided with a connection similar to the quick heating connection is

because the stove has an opportunity, during periods when little hot water is being used, to heat up the entire tank; also the stove, when a very hot fire is being maintained, will supply heated water at a very high temperature and it is better to inject this water farther down on the tank than it is to allow it to concentrate at the top.

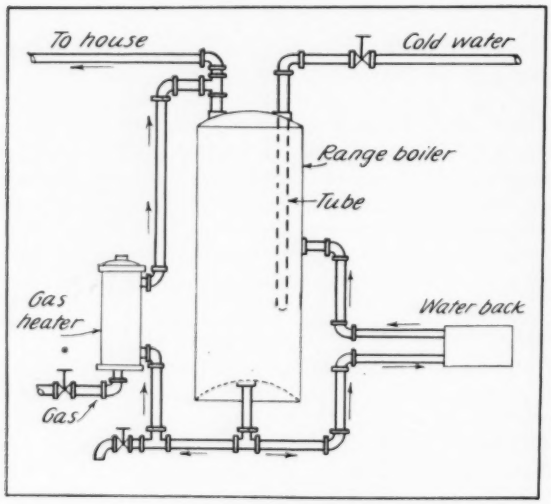


Fig. 1

Another method which is considered to be somewhat better than the quick heating connection is to connect the gas heater up at the top as shown in Fig. 2, the bottom connection being left as indicated in Fig. 1. It is claimed that with this connection the water will be heated in the top of the tank by the gas heater but that a somewhat greater quantity of hot water at a slightly less temperature will be generated in the same time after the gas

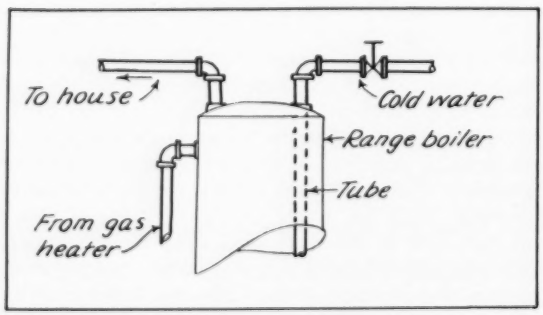


Fig. 2

heater is lighted. It also does away with the difficulty, which sometimes occurs with the quick heating connection, of drawing water up through the gas heater from the bottom of the tank and of drawing it so fast that this water has insufficient opportunity to heat as it passes through the heater so that the hot water supply to the house may be considerably cooled, even though the water in the top of the boiler may be quite hot.

This by-passing through the gas heater is particularly likely to happen, when the quick heating connection is made in the manner illustrated in Fig. 3, and has been known to give considerable trouble. It also is bad policy to attempt to take the gas heater supply off of the stove supply in the manner indicated in Fig. 4 because the

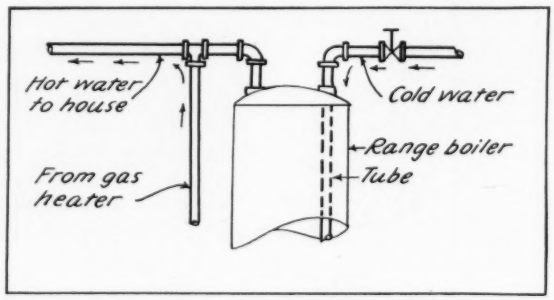


Fig. 3

stove when having a hot fire is likely to set up a considerable velocity of flow along the pipe leading to the stove and in so doing rob the gas heater of an adequate supply of cold water. The same difficulty occurs when it is attempted to connect the discharge pipe of the stove and the gas heater together—one is almost sure to rob the other. It will be seen that in the tank connection at the bottom, which was shown in Fig. 1, there is no particular tendency for the water to flow either to the

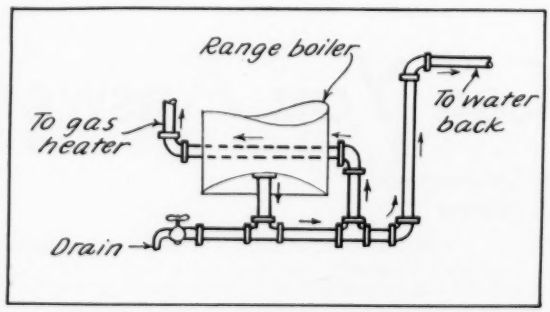


Fig. 4

stove or to the gas heater as, in each case, the water must make a right angle turn and it is just as easy for the water to make this turn in one direction as it is in the other.

How Would You Answer This Question?

It is the intention to install 3 two-hundred gallon indirect water heaters on the side of a steam boiler. The total heating load on the boiler for radiators, piping, etc., is 3,000 sq. ft., E. D. R. exclusive of the indirect heaters. How much additional allowance would you make in the boiler load—if any—to allow for the indirect heaters?

Answers based upon your experience, suitable, will be paid for and published in the March issue.

SPECIFYING "SPANG" PIPE—black or galvanized—for your heating and plumbing requirements, is the soundest guarantee for long-lasting service and satisfaction you can possibly obtain.

Every length is pressure tested . . . cleanly threaded . . . easy to cut . . . safe to bend . . . characteristics that make "SPANG" the preferred pipe for all requirements.

There's a "SPANG" jobber in your vicinity . . . ready and anxious to serve you.

SPANG, CHALFANT & CO., INC.

General Offices: CLARK BUILDING, PITTSBURGH, PA.

SALES OFFICES: New York Boston Pittsburgh Chicago St. Louis Tulsa Los Angeles Dallas San Francisco

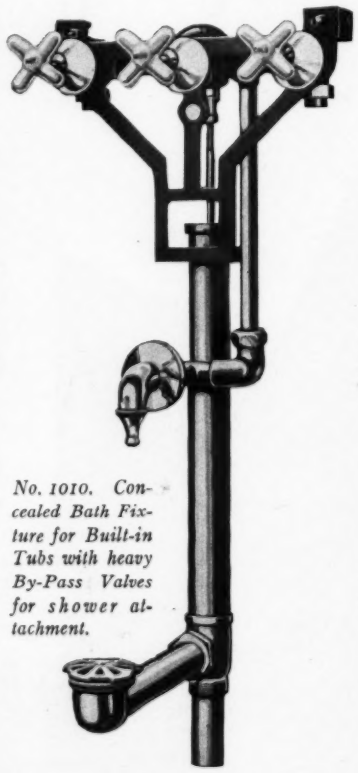
WELDED MILLS: Etna Penna., Sharpsburg, Penna.

SEAMLESS MILLS: Ambridge, Penna.

For Replacement Work and New Installations »»»

American
BRASS GOODS

No. 1011. Concealed Bath Fixture. Two Valve Fixture with Shower.



No. 1010. Concealed Bath Fixture for Built-in Tubs with heavy By-Pass Valves for shower attachment.

The American Line presents a most complete and conservatively priced line of Plumbers' Brass Goods and Specialties to the plumbing contractor whose mission is to satisfy.

AMERICAN SANITARY MFG. CO., Abingdon, Ill.

OUR READERS TELL US

Greetings to Our Members and the Industry

By E. B. KLEINE

On behalf of the officers and board of directors of the National Association of Master Plumbers I wish to extend to all their members and to the entire industry their wishes for a Happy New Year.

Greetings of this character mean little or nothing unless backed by progress and the satisfaction of a job well done. The National Association of Master Plumbers celebrated the 50th anniversary of its founding in New York City last June. For a half century this Association has stood for progress, education, the protection of public health, and the business success of its members.

We are in difficult times, but the National Association of Master Plumbers has faced difficulties before and emerged from them with a larger membership and the increased confidence and respect of the entire industry.

There are many encouraging signs both on the horizon of general business and within our own industry. Our Washington office is keeping in touch with the program of the Reconstruction Finance Corporation. It will not be long before the waterworks and sewerage projects which are being financed by the Reconstruction Finance Corporation will bring new business for our members.

In the Home Loan Bank Act, too, your officers see a benefit for the members of the National Association of Master Plumbers. Officers of building and loan associations are encouraging the use of the funds supplied by this federal agency for the rehabilitation of older properties.

Our members will share in this work because it is generally recognized that plumbing and heating is first and foremost in the mind of tenant and prospective owner.

Through the work of the Plumbing and Heating Industries Bureau we are bringing to the attention of millions of people the need for modernizing plumbing and heating and showing "before and after" pictures which are evidence of what can be done with old bathrooms, kitchens and basements.

We may well face the future with confidence. The master plumber is a vital and necessary factor in the civilized life of today. Society can not get along without him. True, the contractor's services are in less demand today, but this merely means that a pent-up demand is being created which some day will make itself felt in our business.

It is up to us to use our time wisely and to build well for the future. We must maintain our present strength of numbers. We must meet the problems of the day as they arise and look well to the future. If we do this, then it may well be said of us as it was said of the pioneers, "They Builded Better Than They Knew."

Conflict with Overhead Costs

To the Editor:

Personally I cannot understand the position of the manufacturer in attempting to put over a sales policy that is in direct conflict with the findings of the Plumbing and Heating Industries Bureau, and recommendations made from time to time by the Bureau and your own columns, after careful investigation and compilation of statistics on overhead costs.

The Plumbing and Heating Industries Bureau used a large part of its finances and time in compiling the statistics on this subject, and the money spent for this purpose runs into the hundreds of thousands of dollars, a large part of which was contributed by these same manufacturers, and now they would have the master plumber believe that he can merchandise plumbing fixtures on a margin of approximately one-half of the average overhead that, these statistics show, is the average cost of a master plumber in handling his business.

(Signed) GEORGE H. DRAKE, *Director*,
National Association of Master Plumbers.

Buffalo, N. Y.

Wants Mechanical Contracts Separated on Government Work

To the Editor:

We strongly advocate that a move be made in our line of business that will necessitate the government letting the mechanical contract including plumbing, heating and ventilating, in a separate bid on government work in lieu of the method they now use by letting everything through the general contractor, and the general contractor subletting all mechanical.

The government pays 21 per cent more on all extra work by this method. The subcontractor suffers by dealing through a general contractor for the following reasons:

1. Usually from fifteen to thirty days getting remittance from the government through the general contractor after the government has allowed estimate.
2. No contact between mechanical contractor and government.
3. Sluggish and feeble contact between the mechanical contractor and government through general contractor.
4. General contractors who are sluggish and inexperienced cause the mechanical contractor to suffer great loss.
5. No advantage to the government in dealing in a round about manner through the general contractor with the mechanical contractor.
6. Mechanical contractor is not at liberty to discuss

his part of the work with the construction engineer on the job and is not recognized in any capacity by the government on the work except through the general contractor.

7. General contractor holds domineering sledge over subcontractor at all times with payments coming through the general contractor's office.

8. All alibis and damages for which the general contractor is really responsible are put off on the mechanical contractor.

These alone are enough to discourage mechanical contractors and should cause the government to let the work directly, but there are also many other reasons which if the government would go into them, would show the inability, inaccuracy and loss in dollars and cents to the government by letting this work through the general contractor.

We would like to know some way to instigate and to protect the mechanical contractor in his work so a much fairer basis can be instituted in government work.

THOS. L. DAWSON COMPANY.
(Signed) THOS. L. DAWSON,
Kansas City, Mo.

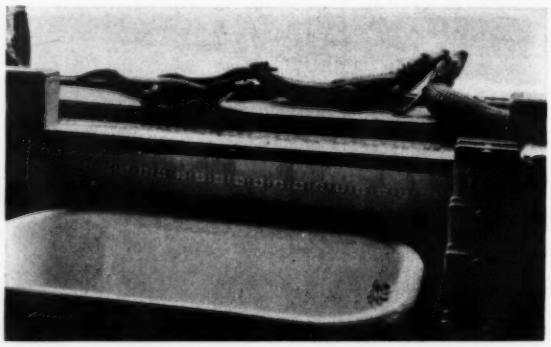
Alligator Exhibit Brings New Customers

To the Editor:

Five years ago while on a trip through the South we purchased two alligators on our way home, and just for the novelty placed them in our display window, believing it to be a temporary arrangement. This drew quite some attention. We started to realize that it was very good advertising.

The following year while visiting the South we brought three much larger alligators along. This made us realize of what value they really were. An elaborate compartment was made of tile, also a large ledge in order that the alligators would be able to sun themselves. This made people from neighboring towns, also people from all over our own town call at our store, in order to get a better view of the alligators and receive information as to their habits.

School teachers line their classes in front of the store and lecture on the alligators. Therefore the children and parents all over town immediately know where the "Alligator Plumbing Shop" is when spoken of. Children on many occasions insist on parents walking several blocks out of their way in order to pass by our store. The alligators are very interesting to observe. They can certainly tell when it will rain. Hours before the least sign of rain you will find their entire bodies buried under water. As to food, they partake food only during the warmer months from June to September; the balance of the year not a bite is taken.



We believe this exhibit has brought quite some business, due to the fact that people step inside and get acquainted with our personnel. We are always very courteous to them; even if they do not buy, we at least have their good will and know that when the time comes for business dealings, they will not forget the Alligator Store.

We invite the public to step in and they accept the invitation, while we often get men or women interested in a beautiful colored kitchen sink or a bathroom outfit, with the result that they become our customers.

We would dislike to part with these alligators now, because they seem to be "ever new," even to people passing daily, as they are fascinated and stop at every chance they have to view them.

We have a display board with washers, spigots, valves and fittings, covering the entire wall, a price tag on each and every item on the board. We have also put price tags on all our fixtures, heaters, etc, so that our customers may obtain prices without the help of the salesman.

Our sales over the counter have increased over 100 per cent since the price tags were put on our wares, and we are very proud of this excellent record in times like these.

(Signed) H. J. BERNINGER,
Allentown, Pa.

Reads D. E. Editorials at Meeting

To the Editor:

With reference to your recent editorials, I mentioned them at our last meeting held November 17 and will further impress them on our members at our next meeting.

I must compliment your magazine on its work along this line as it seems your paper has championed our cause in a very fine manner and I am sure from the expression of the men at the meeting that they appreciate it too.

I think we have a fine organization and are increasing our membership at every meeting. The men are giving considerable time and thought to the meetings. We have changed from afternoon meetings to night meetings starting with a dinner. This seemed to go over very well and we had 22 members present representing all but two towns in southeastern Iowa. Besides building up our trade we are creating a fellowship among competitors which I believe will eventually build for better business.

If you have any suggestions to make for these meetings we will be pleased to have them and if you have occasion to visit this territory it will be a pleasure to have you sit in one of our meetings.

(Signed)
FRANK H. PIERSON,
Fairfield, Iowa.

A CONTEST YOU MUST NOT MISS

WRITE us a letter telling how the sale of air valves has led you to the sale of other plumbing and heating equipment or repair work.

Remember we are only interested in how the sale of air valves—any air valve—helped you sell other goods.

PART OF THIS $200.00 CAN BE YOURS

Read the Contest Rules Carefully

RULES OF CONTEST

Any plumbing and heating contractors are eligible.

Write a letter, not more than 300 words, telling how the sale of air valves helped you sell other plumbing and heating equipment or how this sale secured a new contract.

Prizes to be awarded: First prize, $100.00; Second prize, $50.00; Third prize, $25.00; Fourth prize, $15. Ten additional prizes of $1.00 each.

In case of a tie, duplicate awards will be made.

The decision of the judges will be final.

All letters must be in Newington, Conn., by Midnight, January 15, 1933.

These letters become the property of the Keeney Manufacturing Co.

Names of winners will be announced in the February issue of Domestic Engineering.

Judges: E. Rowland Chase, Assistant Manager of Chase Brass & Copper Co.; S. G. Wetzler, President of Blue Seal Chemical Co.; B. W. Frederick, Vice President of Eastern Foundry Co.

THE KEENEY MFG. COMPANY
NEWINGTON CONN.

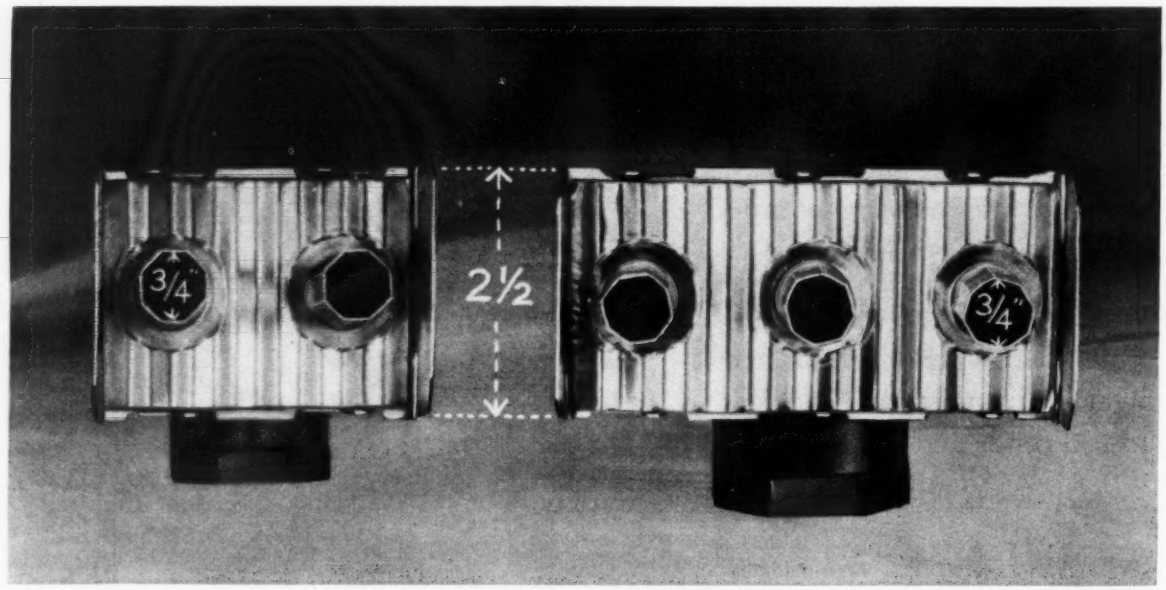
KEENEY air Valves

Reprints of this advertisement are available for all jobbers on request.

NOW • • •

ERSKINE ALL-PURPOSE COPPER RADIATOR

for one pipe steam, water, steam, vapor, vacuum



LARGER TUBES——LARGER FINS

The above photograph shows CROSS-SECTIONS of the two and three tube size Erskine "All-Purpose" Copper Radiators with the following improvements:

LARGER TUBE– ¾ inch instead of ½ inch. This size permits greater steam way, without impeding air flow. It also permits the satisfactory use of this radiator on one pipe steam and hot water systems as well as on two pipe steam, vapor and vacuum.

LARGER FINS— 2½ inches high instead of 2 inches. These extra high fins provide greater heating capacity. No solder is used, the tube being forced into a heat relation with the fin in an operation which changes the shape of the tubes from round to octagonal assuring the most intimate contact. They are light in weight, yet their corrugations give them great strength.

NO INCREASE IN PRICE— A more efficient copper radiator, adaptable to every type of heating job—water, steam, vacuum, vapor or one pipe steam, at the same prices you pay for less efficient, less adaptable copper radiators.

BE SURE TO SEE THEM—Before you install a copper radiator job, be sure to see the Erskine "All-Purpose" Copper Radiator. It will do a better job and render greater satisfaction to your customers. Write us now for prices and full information.

ERSKINE COPPER RADIATOR CORPORATION

1 EAST 42nd STREET — Branches in Chicago, Boston, Philadelphia, Washington — Representatives in all large cities — NEW YORK, N. Y.

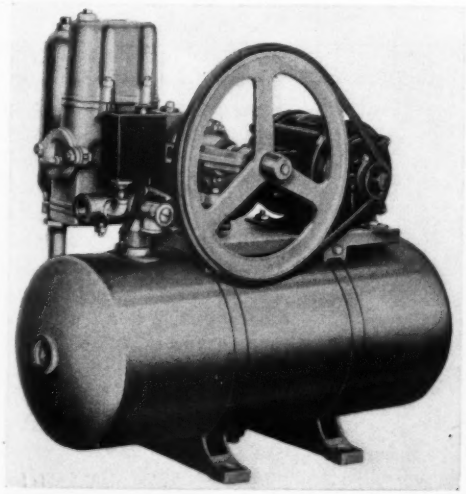
ITEMS FOR STORE, SHOP AND JOB

Readers will find in this department news of our industry's progress in the manufacture of equipment. You can read of the efforts of manufacturers to develop products which will increase customer demand, will make shop methods more efficient and will simplify installation.

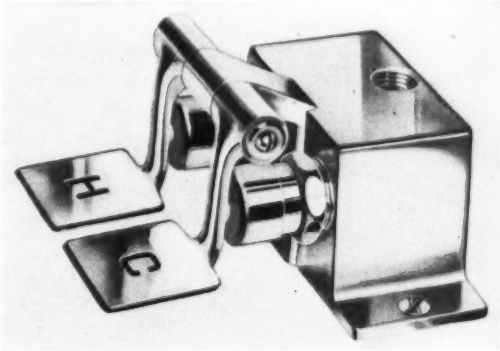
The first article in this issue tells how one contractor is pinning his hopes for success in 1933, to salesmanship and careful workmanship. Above this, it is necessary to keep abreast of current developments in the industry. This section serves this purpose.

A Shallow Well Water Supply System

This shallow well water supply system has been placed on the market just recently to take advantage of the present farm market, having in mind the farm situation.

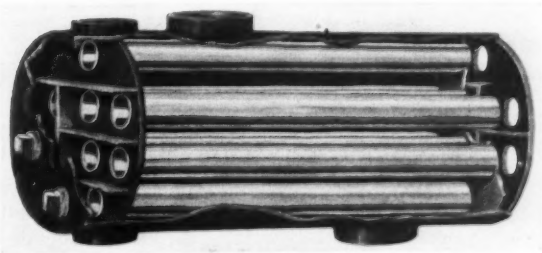


The unit has a capacity of 250 gallons per hour from a well or cistern up to 22 feet in depth. The pumping unit is provided with water lubricated bearings which require no oil. The equipment also includes a ¼ horse power electric motor, a pressure switch, a relief valve, an eight gallon tank and a "V" belt drive. The maker is Red Jacket Manufacturing Company of Davenport, Iowa.



New Pedal Valve Is Announced

Just recently, the pedal valve which is shown here was placed on the market. Of the five smooth and polished surfaces, four are flat. The threads are internal. The pedals tip up so as to facilitate the cleaning of the floor around the fixture. All of the internal parts which are subject to wear are in one unit which comes out when the cap is loosened. Each valve is furnished with both wood screws and expansion bolts. The pedals have a rigid pedal mounting while the direct pedal action is against a push button. The manufacturer is Chicago Faucet Co., 2700 N. Crawford Ave., Chicago, Illinois.



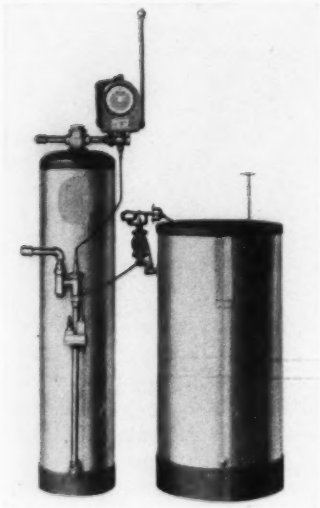
An Indirect Water Heater

Here is a water heater of the indirect type which has just been placed on the market. Listed as being most outstanding is the feature of the straight tubes. These have been designed with screw plugs at each end for

the purpose of cleaning the inside of them. The boiler water circulates over the outside of the tubes. As indicated by the illustration, the heater is of the horizontal type. The castings are made in one piece. The heater also is described as being usable as a fuel oil preheater and as a garage heater. The manufacturer is Johanson Water Heater Co., Inc., located at 1239 Fullerton Ave., Chicago, Illinois.

Fully Automatic Water Softener

The water softening unit which is shown in the accompanying illustration is one of a complete line which has just been placed on the market. It has been designed, among other things, for the purpose of presenting an attractive appearance. The types range from a hand controlled model to a hand controlled semi-automatic, to a mechanical semi-automatic and finally to an electrically controlled fully automatic model. The first type has been made so that it can be converted into any one of the more complete models merely by the addition of supplementary equipment. The unit shown here is designed to regenerate itself by electric automatic control daily at 3:00 a. m. The only attention specified is that of adding salt a few times each year. The manufacturer is the H. L. G. Company of Kalamazoo, Mich.



Portable Pipe Cutting and Beveling Machine

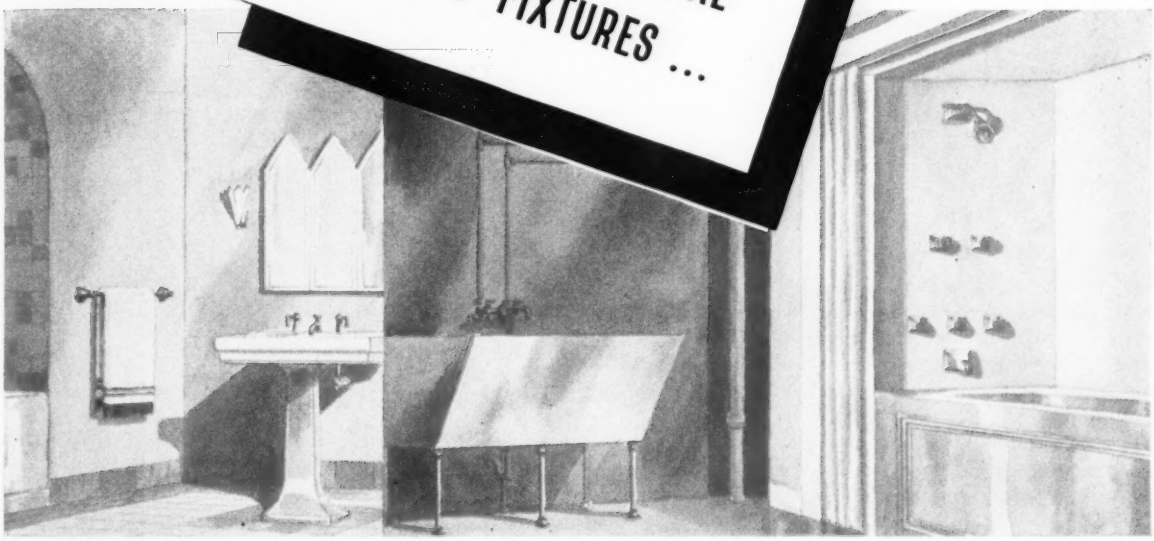
The accompanying illustration shows a pipe cutting and beveling machine which just recently has been placed on the market. It is for use in connection with an acetylene torch. The machine is furnished with a chain of correct length for a 12 inch pipe. Detachable slip links marked 4, 6, 8 and 10, facilitate the fitting of the chain to pipes of these diameters. Additional chains can be obtained for pipes up to 30 in. After the chain is hooked and straightened, it is tightened on the pipe by pushing down two cam levers. Next, the torch is set and clamped into position for the desired cut or bevel. For operation, a crank is turned which rotates the sprocket and chain. Where pipe is free, the machinery is held stationary and the pipe turns. Where the pipe is fixed, the machine travels around it. The accompanying illustration shows a pipe fitting being cut. Air Reduction Sales Company, with general offices at 60 E. 42nd Street, New York City, is the manufacturer.

A Coal Burning Water Heater

This domestic water heater has been placed on the market as an improvement over an older model. The base of the unit contains the heater which has been designed to burn pea coal. A large firepot has been incorporated in the unit for the purpose of making the need for firing less frequent. The smoke flue runs up through the center of the tank and out of the top, thus bringing the flue gases in contact with water to be heated. The bottom of the storage tank forms the dome of the heater. This provides a second heating surface. A third heat transfer service is in the form of a firepot coil. This is connected in the regulation way, taking cold water from the bottom of the tank and delivering heated water to the top. The insulation is described as being of the dead air type. As for control, an aquastat operates to open or close the draft and damper doors. Sizes are listed as available in capacities of 40 gallons and up. The total height of the 40-gallon size is 60 in., the diameter is 20 in. and the flue connection is 5 in. The manufacturer is Wilco Utilities, Inc., located at Grand Central Terminal, New York City.

REMODELING

offers numerous opportunities for ADDITIONAL PLUMBING FIXTURES ...



During 1933 there is going to be considerably more remodeling than new construction activity. Your best opportunities for new business therefore lie in the sale of new or additional fixtures. An extra bathroom is a sales possibility in most homes and requires an extension of hot and cold water supplies, vent and drainage lines. The installation of an extra fixture in the basement or on the first floor is another possibility. Showers are rapidly gaining in popularity and in sales volume and could be profitably promoted by you this year.

The sale of all of this equipment requires in each case from a few feet to several hundred or even thousands of feet of steel pipe.

Your "Central" jobber will welcome the opportunity of furnishing the steel pipe for these and other jobs you sell during 1933.

CENTRAL TUBE CO.

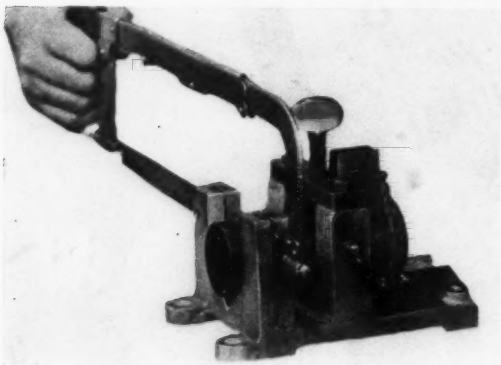
PITTSBURGH, PA.

CENTRAL STEEL PIPE

"TESTED STRENGTH
IN EVERY LENGTH"

A Sawing Vice For Cutting Tubing

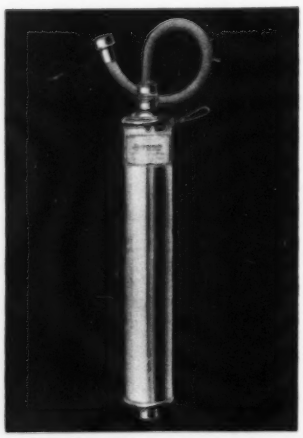
Here is a new device which has just been placed on the market. It is for the purpose of cutting square ends on thin-walled tubing. It is designed so as not to crush or mar the pipe. A strip of cotton webbing and a piece of rosin are included for use when cutting pol-



ished plated tubing. The capacity of the device ranges from ⅛th inch to 2-in tubing sizes. Locking into position is by means of a reversible vice block. A long "V" trough is provided for purposes of centering the tubing. The saw guide prevents the saw blade from running off at an angle. The Borden Company of Warren, Ohio, is the manufacturer.

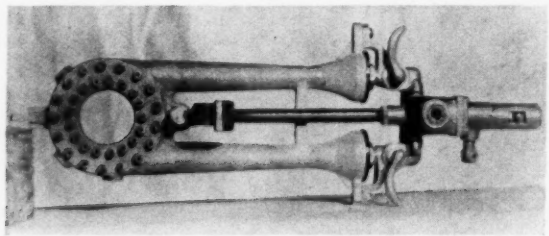
Portable Water Softener for Homes

The portable water softener which is illustrated here has been designed especially for use in removing the hardness from the water supplied to bath tubs and washing machines. It has been made suitable for softening water supplies which do not exceed a hardness of thirty grains. A finish of either nickel or chromium plate is optional. The size is 2¾ in. in diameter by 18½ in. in height. Its weight is six pounds. A hose and faucet connection also is supplied. The bead chain is for supporting the device in a vertical position. Reverse flow through the unit has been made possible by the hose connection which is interchangeable as regards either end of the unit. The manufacturer is Water Softening Company, whose location is 4829 N. Paulina St., Chicago, Ill.



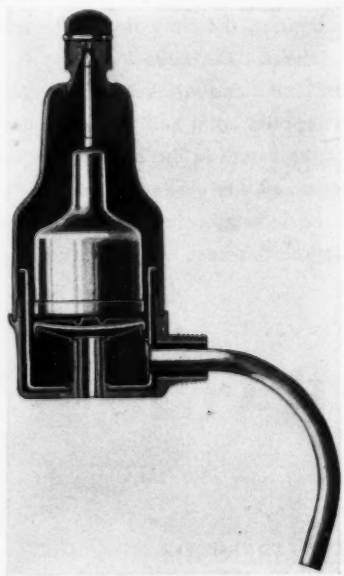
Adjustable Water Heater Burner

This burner has just recently been placed on the market for the purpose of permitting the owner to regulate the quantity of water he wants to heat automatically. For instance, the owner is enabled to heat more water automatically on wash days and less on other days. The adjustment is made merely by opening or closing either one or both of two gas valves which are built into the device. When one gas valve is open and the other closed, only one-third of the burner goes in operation. With the second valve open and the first one closed, two-thirds of the burner operates. With both valves open, the entire burner supplies heat. The maker is Ruud Manufacturing Company located at Pittsburgh, Pennsylvania.



A New Vacuum Valve Is Announced

A new vacuum valve for installation on radiators in one-pipe steam-heating systems is announced. A double vacuum air lock is a feature of this valve; the vacuum check at the top acts as the vacuum starter in a half-hot radiator; the vacuum diaphragm is the main lock that closes the port, exerting a pressure 20 times greater than the check.



The valve is of all metal, double shell construction; base and nipple connection are a one-piece, hot brass forging; the valve pin is of non-corrosive nickel silver. Maximum operating pressure is 10 lb.; the connection ⅛ in. Hoffman Specialty Co., Inc., located at Waterbury, Connecticut, is the manufacturer of this new vacuum valve.

Automatic Heat *and* Air Conditioning Dealer Section

An architect experiments with air conditioning in his home.... A "trouble shooter" is called to a job where fan noises have become objectionable, and what he found....The code for testing oil burners and the factors taken into consideration....And the second part of the original material on relative humidity and its relation to comfort..... Also new dealer products.

.....Another balanced ration of practical information on the allied fields of automatic heat and air conditioning, which will be furnishing part of the dealer's sales volume for 1933.

Can you answer "yes" to these six questions?

- 1.—Have you a burner that exactly fits a Vecto heater?
- 2.—Have you a burner that exactly fits an Arcola Heater?
- 3.—Have you a burner that exactly fits a French range?
- 4.—Have you a burner that exactly fits small high pressure gas boilers?
- 5.—Have you a burner that exactly fits a 20,000 foot steam job?
- 6.—Have you a complete, time-tested line of range burners?

You can if you handle Silent Glow

How many different manufacturers do you have to deal with—how many separate agreements do you have to make—before you can offer complete oil burner service?

With the Silent Glow line the answer is exactly *one.* Because Silent Glow has developed burners for more different types of installations than any other two manufacturers combined.

Regardless of the size or type of job, there is a Silent Glow scientifically designed to meet the specifications—and quality built down to the last bolt and screw.

Complete Patent Protection

Equally important, the Silent Glow line assures complete patent protection. Pressure units are licensed under the Zoro Patent Estate—rotary units under the Tim-Tor patents as well—and Silent Glow Range Burners under the Esgee Patent Associates. When you build with Silent Glow, you build for *permanent* profits.

Right now—at the beginning of the New Year—why not get the full facts on the Silent Glow proposition?

●

THE SILENT GLOW OIL BURNER CORP.

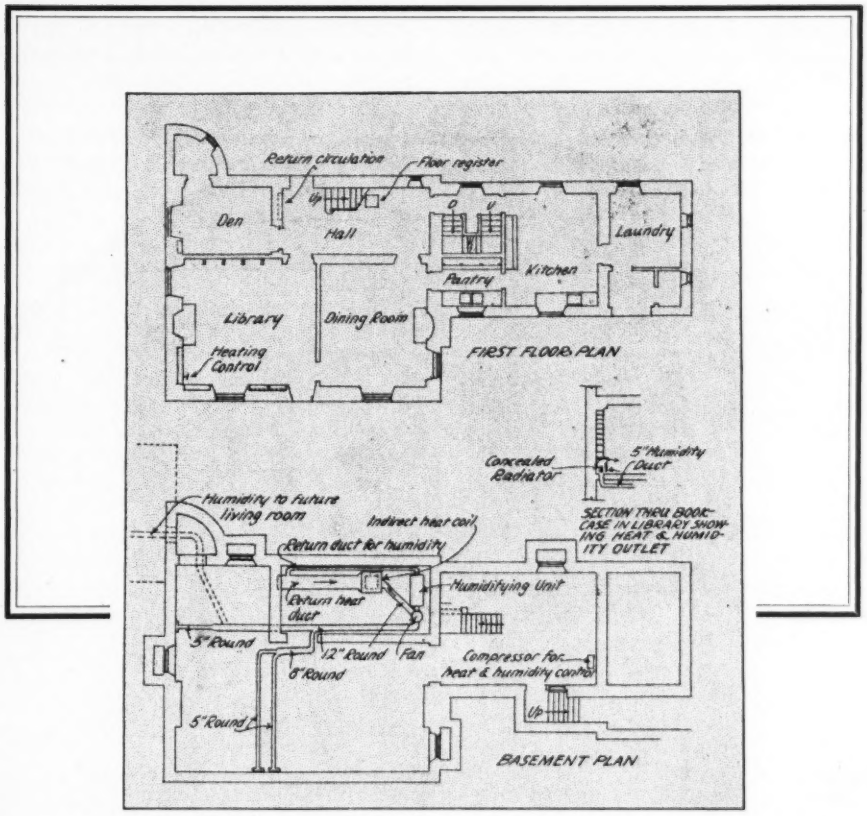
HARTFORD, CONN.

Boston Chicago St. Paul

Member National Electric Light Assn.
Member American Oil Burner Assn., Inc.
Member National Fire Protection Assn.
Member Oil Heating Institute
Member Distillate Burner Manufacturers Assn.

In Canada:

SILENT GLOW OIL BURNER CORP., Ltd.
162 St. Catherine St. West, Montreal, P. Q.



The basement and first floor plan showing the placing of humidifying unit and duct work. Rooms to be added have been allowed for in planning the installation

Modernizes Heating Plant With Air Conditioning

Walter Mellor, architect, experiments in his Philadelphia home and finds equipment to meet his needs

THE interest that is so widespread in the subject of air conditioning is indicated in a significant way by this story. The job in question is installed in the home of a Philadelphia architect, Walter Mellor. We learned of it in the course of contacts with the air conditioning situation in Seattle, Wash. The fact that Mr. Mellor had a successful installation working in his home in Philadelphia was known across the continent in Seattle.

It is obvious, from what Mr. Mellor has to say concerning this installation, that he has done quite a bit of experimenting. As his remarks show, he was primarily interested in securing a certain humidity, evenly spread through the house. At the same time, what he has done should open the eyes of heating contractors to the manner in which air conditioning sales may be made to the home owner who now has a boiler and radiator heating system in his home.

As in the case of all building products, it is evident that sales for some little time to come will bulk largest in the already existing homes. Modernizing of the older homes should include not only the addition of automatic heating methods, but the addition of air conditioning comfort.

This new appeal will give the dealer something to work on in those homes with which he is familiar and

which, perhaps, he has already approached on the general idea of modernizing. How to secure the added comfort of proper humidity and controlled air flow and cleanliness is a matter of interest to home owners, who are reading about air conditioning in their favorite magazines, in the newspapers, in advertising.

Here, in Mr. Mellor's own words, is the theory of his experiments, and the job he finally worked out to give him the conditioning he desired:

"For years I have been interested in air conditioning in houses, and when I built my own house some four or five years ago I installed a system in it. At that time little was known on such a subject here in the east, at least for moderate sized houses. First I incorporated two individual room air washers. One of these was in the wall of the dining room and the other in the hall.

"It was my idea, as well as that of the engineer, that with these units I could obtain the desired relative humidity throughout the house. This system, however, did not prove altogether satisfactory as the relative humidity was comparatively high in the two rooms in which the units were installed and low elsewhere. Beside this, they were quite noisy, and Mrs. Mellor objected very seriously to this. I, therefore, decided to eliminate them and to install a recirculating system for the hall with a unit in the cellar.

"This unit was designed by my engineer and myself and consisted of a wheel with flat fins on it which operated at a slow speed in a pan of water in which were placed heat coils supplied by the house heating system. A fan was placed behind this wheel. While I obtained much better results from this than from the original one, it still was not altogether satisfactory. I believe the reason for this (whether I am correct or not I do not know as I am not an engineer) was due to the fact that the water in the pan was not heated to a sufficiently high temperature in order to give off a vapor, the house seating system being a hot water system. If this system had been a steam system, I believe this installation might have worked.

"On one of my visits to Duluth in connection with erecting a large residence there I was shown an installation with fan and ducts. Water was sprayed on a heating element. The air, heated by the radiators, was thus humidified, filtered, and distributed by the fan

through the house. I became very much interested in it. Therefore, about two years ago I determined to replace the system I had in my own house with a similar humidifier.

"When installing this system I determined not only to recirculate the air in the hall but also to have outlets in the dining room, library (which is my living room) and den. In other words, all the important rooms on the first floor of the house are now equipped with outlets. My house has a concrete floor slab and all radiators on the first floor are concealed, all construction being very substantial. It was, therefore, not a simple job to provide outlets in the important rooms, and the only feasible way appeared to be to carry the ducts in the basement directly under the radiators in the dining room, library and den. This means that the humidified air passes over the radiators and into the rooms through the same grills as the heated air. All rooms are controlled automatically by a patented system of heating and humidification. I have had splendid results and am thoroughly satisfied with the installation.

"From the above you will see that I have gone through progressive steps as my knowledge and experience grew.

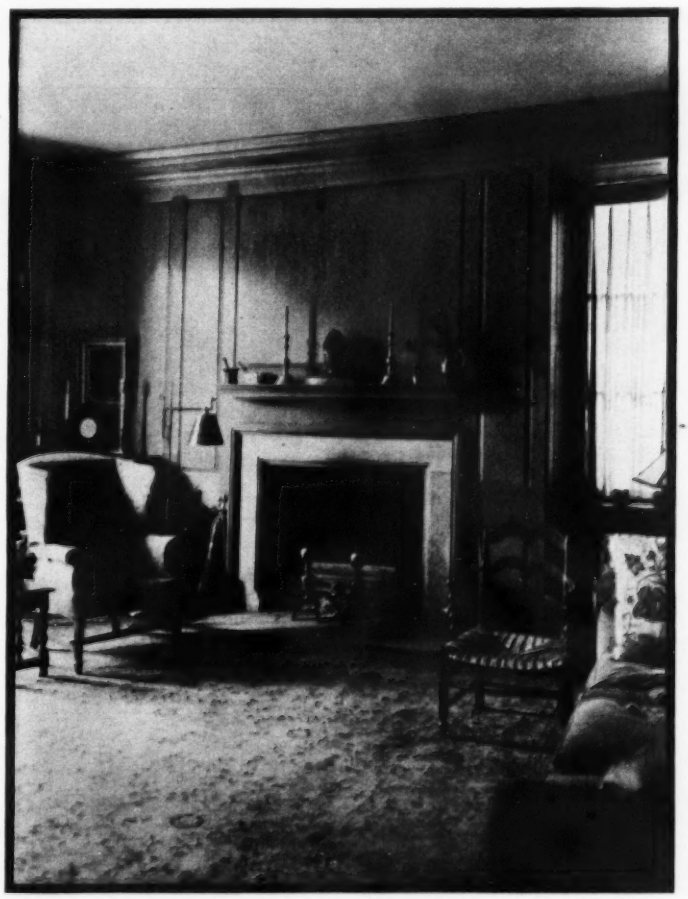
DESIRED RESULTS ACHIEVED

"I would not like to say definitely that it was because of my library, which contains some three or four thousand books, that I became interested in air conditioning in homes, although undoubtedly this had something to do with incorporating it in my own home. My original interest was due to the fact that my mother, who was English, complained a great deal of the dry atmosphere in our homes, a condition which she was utterly unused to when living in England. I think this is really what started my study of this subject.

"From my researches the temperature in a library should range between 65° F and 75° F, and the relative humidity should be between 45 and 55%. Any air that is introduced into the room should have the dust removed, and I have seen it stated that the water used in an air washer for such a purpose should be kept alkaline. All exposed walls should be insulated. In my particular case all the exterior walls of my house, including those of the library, are insulated, which prevents condensation during the heating period of the year. I maintain between 50 and 55% of relative humidity. In order to obviate condensation on the glass of the windows I have been compelled to put on double sash. This, however, in my particular case causes no inconvenience since I have exterior doors which lead outdoors from the main rooms on the first floor."

We believe this material will be of interest to readers. Mr. Mellor has persisted in his efforts and has been able to attain the degree of comfort which he desires. The system as it is now installed is not of special design, but is available among makers of air conditioning equipment. We offer the article as of particular value in illustrating what can be done in the home already being heated by a radiator system, where the owner desires to have controlled humidity, greater cleanliness of air, and a better air distribution.

On the facing page is a view of the library where there are some four thousand books. Below is another view taken in the library. At extreme left may be seen the humidifying controls



Trouble Inspection Report

(Name) Charles Zorn **(Address)** 2015 Main St.

(Date Installed) 10-15-31 **(Date Reported)** 12-14-32

(Corrected by) O. W. Thomas

Following is my report of the trouble located, and what was done to it:

WHILE we were inspecting one of the new systems that Mr. Hay is now installing, he told me that the fans on the Charles Zorn residence have gradually become more and more noisy until now the noise is very objectionable. We stopped in at this job later on in the day and found Mr. Zorn at home. He seemed to be a very reasonable man and said he probably had to expect his equipment to become a little noisier as it grew older, but he thought it should not become a nuisance in one year. When he started the fans I realized he had ample cause for complaint for I thought myself that they were going to jump out of their housings. This job is equipped with a spring base motor, and the fans set themselves and the motor teetering back and forth to such an extent that every little while one of the fans would scrape its housing, making a very objectionable racket.

Mr. Zorn reported that the noise had started last spring (this job was installed last fall) and that it was continually growing worse.

I stopped the heater and crawled into the duct through

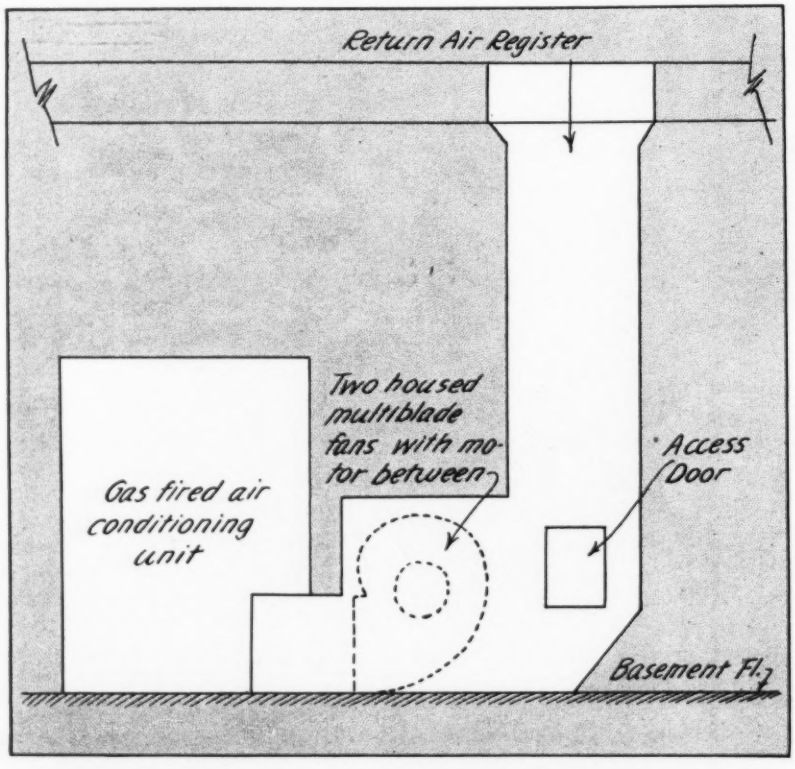


Fig. 1—Here is the equipment which was installed in the above mentioned residence. As indicated, this consists of an automatically controlled gas boiler, a hot water air heater, humidifier and two housed fans

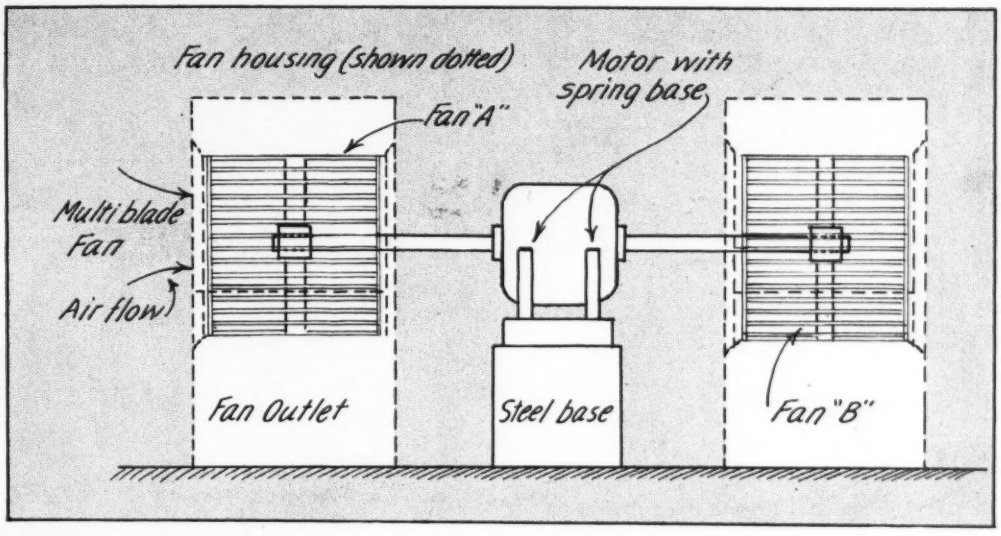


Fig. 2—This elevation drawing shows how it was possible for the fans to teeter as a result of one of them becoming unbalanced. Note that the motor is shown mounted on a spring base

the access door. The fans seemed to be tight on the shaft and the motor and its spring base were in good condition. As the fans slowed down I noticed that they ran very freely but before they stopped they moved back and forth several times as though they might be unbalanced. When I flashed my light into one of them I found six blades so thickly encrusted with dirt that the spaces between them were completely filled. Removing some of the dirt with my fingers, I found it to be oily, so here was the explanation of the trouble. While oiling the motors last winter someone had spilled a little oil on these blades and they had been picking up dust and dirt ever since. As the dirt accumulated it gradually became oil soaked, thus keeping the surface oily enough to pick up more dirt. As the dirt collection increased it unbalanced the fans more and more.

When I explained this condition to Mr. Zorn he remembered that his oil can had slipped while he was oiling the motor last winter but he had not noticed that any oil had stayed on the fan blades.

After we cleaned the fan, we started the motor again, and the fans were as quiet as ever.

O. W. THOMAS.

Note

The equipment installed in the Zorn residence is illustrated in Fig. 1. It consists of an automatically controlled gas boiler, a hot water air heater, an automatic humidifier (not shown) and two housed multiblade fans driven by a spring mounted motor. No filters were used in this installation.

The fan and motor arrangement is illustrated in Fig. 2. The motor is provided with a spring base and is therefore free to move a little. When Mr. Thomas said that the fans were "teetering back and forth" he meant that when fan A moved up, fan B moved down, etc. This was due to the unbalancing of one of the fans by the dirt accumulations shown in Fig. 3.

Fig. 3 shows the construction of the fans and the way the dust and dirt accumulated on the oily blades.

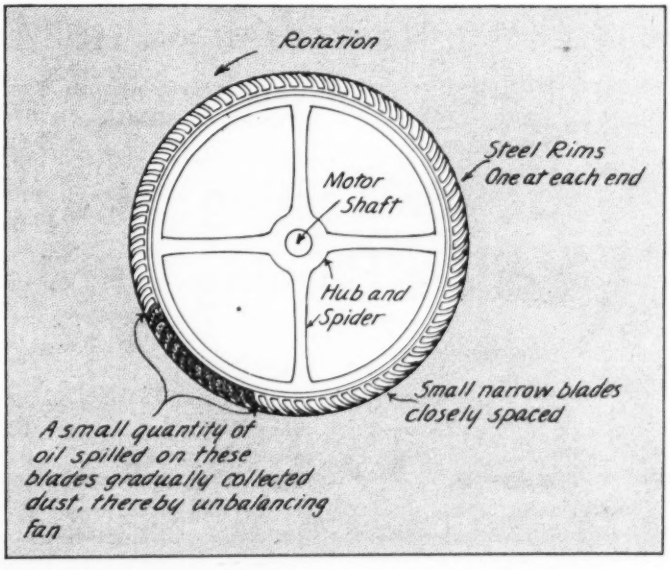

Rotation
Steel Rims One at each end
Motor Shaft
Hub and Spider
Small narrow blades closely spaced
A small quantity of oil spilled on these blades gradually collected dust, thereby unbalancing fan

Fig. 3—"I found six of the blades so thickly encrusted with dirt that the spaces between them were completely filled. This was the explanation of the trouble

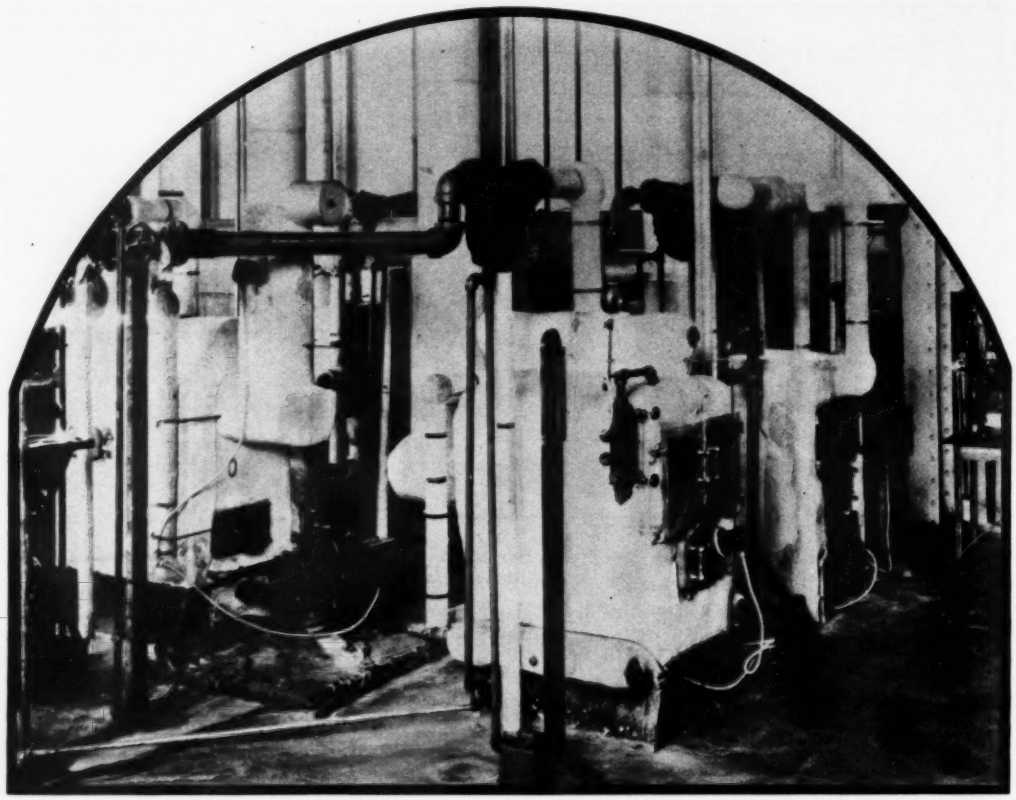


Fig. 1—"To study oil burners a number of types should be tried in one boiler thus keeping as constant as possible the characteristics of the boiler." Here is a view of the test set up

Back of every piece of work there is preliminary effort which influences but which does not appear in the finished product. This interpretation tells of some of the highlights which went to make up the

Code for Testing Steam Boilers Burning Oil

By L. E. SEELEY

THE object of testing in general is to determine the properties of substances and the behavior of things under various conditions. The basic technique of testing rests upon the art of measurement. Measurement is an exacting procedure. Test codes by their very nature reflect this to a great degree.

The problem of testing may be divided into two parts: (a) what to measure and (b) how to measure. In many of our practical activities the former is the more important. It is necessary to know what influences or factors are involved in the action of materials or the performance of devices. Until all of these factors are known and measured tests will be to some degree unsatisfactory. It is the chief worry of those developing methods of testing not to miss some influences which may be at work. Of this, however, no one is certain.

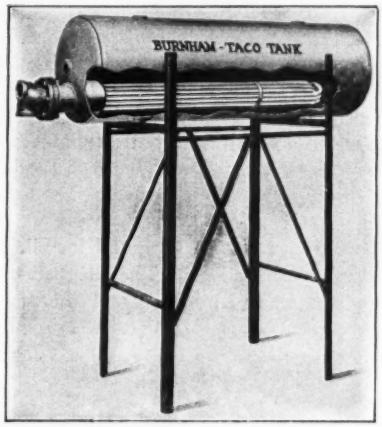
Experience has been the practical test of codes. It is felt with good reason that if tests are run under the

The Burnham-Taco Tank

A New Development of An Old Idea

THE modern demand for hot water, necessitates a safe, economical, fuelless method to achieve proper results.

The Burnham-Taco Tank is not a new idea. Copper heating elements have been used in large tanks for years.



THE BURNHAM TANK

Appreciating the fact that the trade could use to good advantage a combination tank and heating unit in small standard sizes, we set to work and developed the Burnham-Taco Tank.

Burnham-Taco Tanks are particularly adapted for all year round operation especially when connected below the water line in conjunction with an oil, gas or stoker fired heating plant.

Each tank is licensed to be installed under Taco-Abbott patent No. 1654396. New low prices should be attractive enough to stimulate business, now.

Consumers Prices

with Copper Tanks				with Galvanized Tanks			
40	Gallon	14"x60"	$ 90	40	Gallon	14"x60"	$ 42
66	"	18"x60"	119	66	"	18"x60"	66
82	"	20"x60"	144	82	"	20"x60"	78
100	"	22"x60"	168	100	"	22"x60"	90

Prices quoted are all F. O. B. Irvington, N. Y.

Prices quoted are all F. O. B. Irvington, N. Y.

Specifications

COPPER TANKS—
Extra heavy, guaranteed for 106 lbs. working pressure.

GALVANIZED TANKS—
Extra heavy, all welded, guaranteed for 100 lbs. working pressure.

HEATING ELEMENTS—
Removable unit of U-bend seamless copper tubing. 40 Gal. and 66 Gal. tanks equipped with No. 4-48 Taco units. 82 Gal. and 100 Gal. tanks equipped with No. 4-60 Taco units. These sizes are considerably larger than are regularly used, but will prove much more efficient.

Boiler connections 2"—Tank connections 6½"

Burnham Boiler Corporation

IRVINGTON, NEW YORK
Representatives in All Principal Cities

MAIL THIS COUPON FOR LITERATURE AND PRICES

BURNHAM BOILER CORP.
Irvington, N. Y.
Send me full information and prices on Burnham-Taco Tanks, advertised in Domestic Engineering.

Name .....

Address .....

same conditions throughout and the same behavior follows each time, the method of testing is practically satisfactory. It is time to worry when seemingly identical conditions do not produce identical results. The scientist is less naive. He expects at least small deviations and studies them most carefully for a clue to something still unknown.

This code provides for the testing of two devices in combination. This must be kept in mind for a proper evaluation of such tests. It is of significance only for the particular devices tested or devices very similar in type and size. The peculiarities of a particular oil burner or boiler cannot be entirely determined from a single series of tests. To study oil burners a number of types should be tried in one boiler thus keeping as constant as possible the characteristics of the boiler. To learn about boilers one oil burner should be used in the several boilers. The characteristics of the oil burner whatever they may be are thus kept reasonably constant. Differences in performance can be allocated somewhat better and a more valuable background of experience is obtained.

So far as this code is concerned the measurements of boiler performance are primarily those having to do with the heat absorbed. This means the proper measure of evaporation and involves the weighing of feedwater, feedwater temperatures, the separation of moisture, detection of priming, etc. The oil burner measurements are concerned largely with the generation of heat (i.e., weight of oil burned, the quality of combustion, etc.).

Draft, quality of combustion, draft loss through the boiler, and flue temperature are involved with both devices. This makes the necessity of complete and accurate measurements more apparent. Sometimes tests are made in the field which seem, superficially, the same but which will be found not to be if the code is followed. Draft measurements for example are especially important and will account for noticeable differences in seemingly similar tests. A change in draft usually will change the quality of combustion, the draft loss through the boiler, the flue temperature, the overall efficiency, as well as such things as igniting characteristics and combustion sounds.

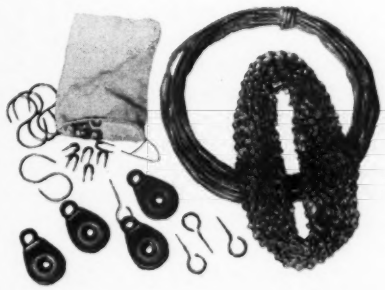
The code as it relates to the boiler follows the other boiler test codes of the American Society of Heating and Ventilating Engineers except in such matters as fire chamber dimensions. There are details, which have resulted from much thought and experience, that will not impress the inexperienced person. They are concerned with accuracy of measurement primarily. For example, a small matter like the arrangement of a feedwater thermometer well might seem too simple to discuss. Why use two valves and why use the valve between the well and the boiler for shut-off purposes? If the valve between the well and the water supply is used as the shut-off it might be possible in some cases for water to circulate from the boiler to the well and cause an incorrect temperature. Such errors have occurred. It might not occur in every set-up but the code provides against it once and for all.

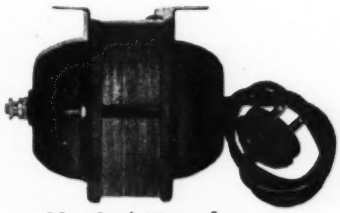
The diagrams showing the location of the sampling tube and thermocouple are quite important. First the general location dependent upon the shape of smoke hood is of importance in order to get truly representative

Fig. 2—"The duration of tests is stated in such a way as to insure that certain minimum quantities of fuel will be burned. This will make the errors fall more consistently." This view is of the exterior of the laboratory in which tests for the code were conducted

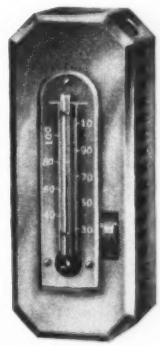
Announcing...the New Low-Priced "GENUINE DETROIT" TEMPERATURE REGULATOR...

EASY TO INSTALL · REQUIRES NO SERVICE · PROFITABLE!

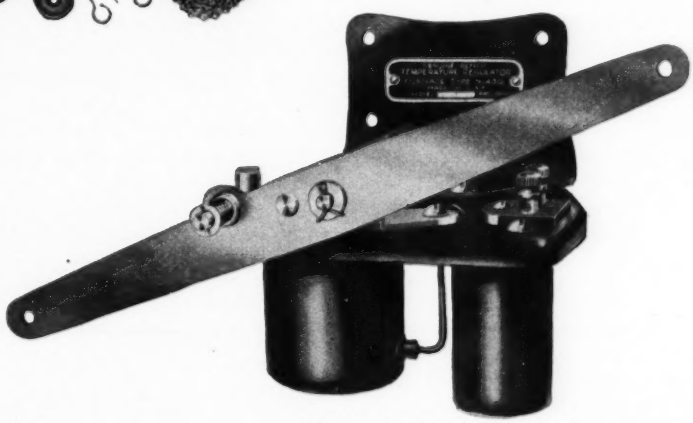




No. 836 Transformer



No. 454 Thermostat



No. 430 Motor Unit

BIG profits are ahead for dealers selling the new No. 425 "Genuine Detroit" Temperature Regulator. At the present low price, it will quickly save its cost in fuel and provides protection to the family health, freedom from heating cares and added comfort. Every furnace and boiler owner is an immediate prospect!

The "Genuine Detroit" Temperature Regulator is as simple to install as it is to sell. No wearing parts to require service! Easy to connect to lighting circuit in the basement. Simple two-wire hook-up makes possible quick installation. Operates noiselessly and efficiently. Write today for complete details on this new money-making product.

DETROIT LUBRICATOR COMPANY

Trumbull, Lincoln, Marquette & Viaduct
DETROIT, Mich., U. S. A.

Lubricators · Carburetors · Valves

Automatic Controls for temperature, pressure, humidity. Refrigeration, Oil Burner and Heating Accessories

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

readings. Also the distance which the thermocouple and tube are inserted is important. Having these two close together insures greater accuracy.

Smoke-hood draft likewise will not be accurate unless care is exercised to have the tube at right angles to the flow of the gases. The constant checking of draft gages arises from the fact that a number of things may give inaccurate readings. Rubber tubing may crack or burn; the pipe may become clogged with soot; the gage might be moved accidentally from its level position; the gage liquid might expand due to heat from the smokepipe or boiler or the liquid might be evaporated slowly if kept quite warm for long periods of time.

Orsats and CO_2 recording machines must be watched continually. Scales may get out of adjustment. It is advisable to use two watches rather than one in measuring time. Reasonable precautions are mentioned in the code and these should not be viewed as an attempt to make the testing seem wearisome or difficult or to give a technical flavor.

The boiler piping and separator arrangement has much to do with detection of priming and the accuracy of moisture determination. The location of the shut-off valve beyond the separator is a necessary item.

The choke damper is kept open in order to get a correct draft reading at the boiler outlet and consequently the draft resistance of the boiler. If the test particularly is in relation to the boiler, the choke damper should be present. Due to design, instances may be found where a wide open damper fails to provide as large an effective flow area as it might if differently located. A number of draft readings taken at different points in the boiler may show that restricted areas exist.

There will be certain errors in measurement considered normal for satisfactory testing. The duration of tests is stated in such a way as to insure that certain minimum quantities of fuel will be burned. This will make the errors fall more consistently. For example, if there is a possible error of one-half of a pound in the weighing of oil it is evident that the error will be much greater if only ten pounds of oil is burned as compared to one hundred pounds.

If the burner is of the "high-low" type weighted averages must be made. Suppose the fuel burning rate at "high" is twenty pounds per hour and at "low" two pounds per hour; the combustion 10 per cent CO_2 at "high" and 4 per cent at "low" and the duration thirty minutes "high" and thirty minutes "low." A straight average of CO_2 $(10 + 4) \div 2 = 7$ per cent would be incorrect and the heat balance inaccurate. Actually 10 lb. is burned at 10 per cent and one lb. at 4 per cent (11 lb. total) giving $[(10 \times 10) + (1 \times 4)] \div 11 =$ 9.45 per cent. A simple example of weighted average might be as follows: If ten persons have $10.00 each and one person has $4.00, what is the average per person? The answer would be $9.45 obtained by the same expression shown above.

By way of summary it may be stated that the purpose of this code is primarily to determine the behavior, capacity and efficiency of a heating boiler and an oil burner working in combination under certain observed conditions. It is a means of discovering what is happening. It does not tell one how to design a burner or a boiler. It does not tell the consumer all he might wish to know. It does make it possible to specify what performance is required and gives the means of checking the performance actually delivered.

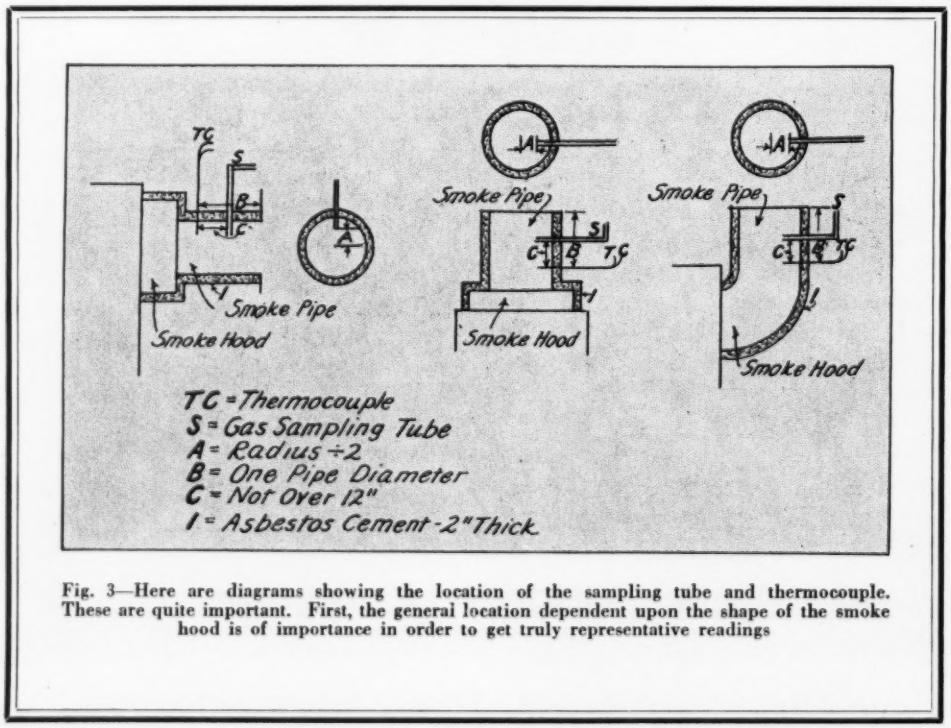


Fig. 3—Here are diagrams showing the location of the sampling tube and thermocouple. These are quite important. First, the general location dependent upon the shape of the smoke hood is of importance in order to get truly representative readings

Comfort Temperatures in Air Conditioning

by MALCOLM TOMLINSON

IN THE November issue, we carried the first part of these two practical articles on the fundamentals of psychrometry—which is the study of air in relation to the water vapor which it carries. In the first part of the article, we touched upon the two scales (wet and dry bulb) for recording temperature readings, described the psychrometer and its use and explained how relative humidity is measured by the difference in the reading

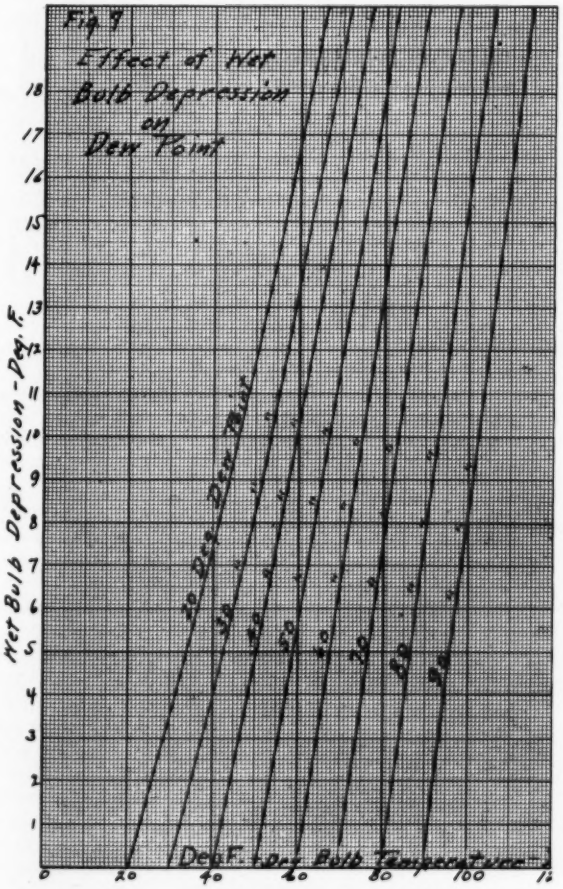


Fig. 7—These dew point curves starting with air in a condition of saturation at the bottom of the chart show dry bulb, wet bulb and dew point are the same value in degrees. Increase in the wet bulb depression or in the dry bulb temperature affects low dew points more than those which are high

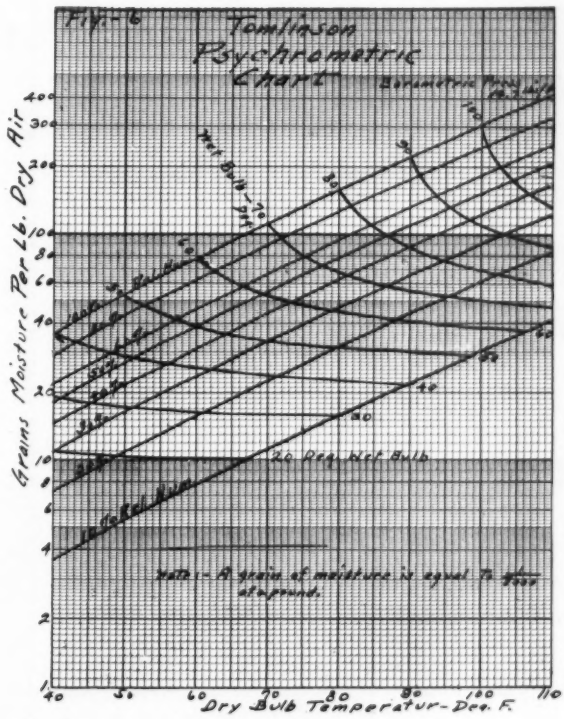


Fig. 6—Two sets of curves—wet bulb and relative humidity—are shown here. Suppose, readings were obtained of 70 degrees wet bulb and 80 degrees dry bulb. The relative humidity at the intersection of the vertical 80 degrees dry bulb line with the 70 degree wet bulb is 43 per cent

of the dry bulb and the wet bulb thermometer. In the present article, the material swings into a description of the psychrometric chart and its uses.

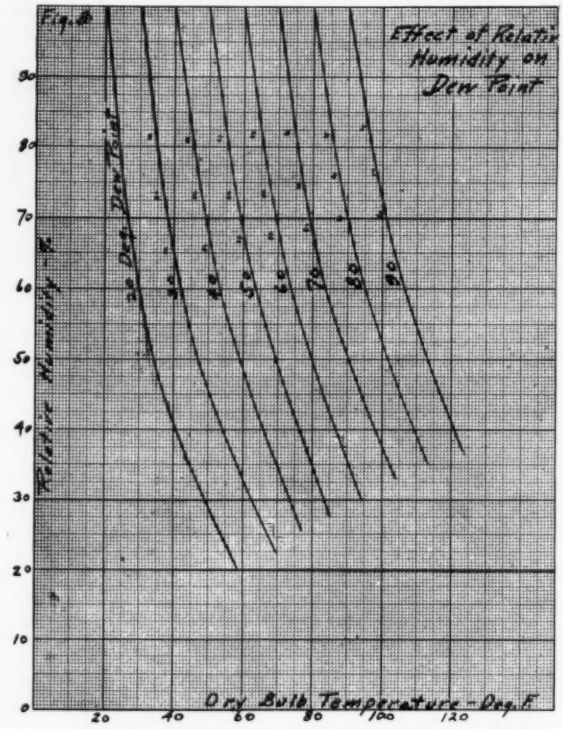
The psychrometric readings can best be interpreted by a psychrometric chart. In its simplest form this chart consists of wet bulb and relative humidity curves plotted against dry bulb temperatures and the absolute humidity. The latter is usually given in grains of moisture per pound of dry air. As a grain is a seven thousandth part of a pound it is an extremely small unit of weight. To obtain the relative humidity with this chart the intersection of the wet bulb and dry bulb temperatures is found on Fig. 6. The relative humidity curve which would pass through this intersection is the correct reading. Frequently it has to be estimated. Directly to the left of the intersection, at the margin, is the absolute humidity.

Every air mixture has a temperature at which saturation will occur if the dry bulb be lowered to that point. When saturation occurs a very slight amount of water vapor separates from the air and appears on adjacent surfaces in the form of dew. If the surface happens to

GREETINGS
1933
John D. Long, McKinley's Secretary of the Navy, once said that "Great results often overshadow decisions that make possible their achievement." Paraphrasing: "Judicious decisions in motor selection often foreshadow the success of the appliance." Truly, the motor does in great measure determine the success or failure of the machine on which it is used.
The Leland Electric Company does not design motors for any and all applications. On the contrary, it limits its ratings to 3 H.P. and designs mainly for builders of appliances. Leland specializes.
The Leland motor for oil burners, stokers, air conditioners and refrigerators is a highly refined special motor.
It is built with the utmost precision and is conservatively rated and long lived. It is quiet—exceptionally quiet.
Due to the special type of mounting employed, there can be no transmitted vibration and no shaft misalignment due to thrust.
In short, all of the operating characteristics required of an ideal motor for these applications are present in this design.
This motor has already achieved widespread acceptance in this Industry. In 1933 it will accomplish even wider acceptance. It is a motor that YOU SHOULD INVESTIGATE, if you are not already acquainted with it.
A. C. Repulsion Induction
D. C. and Polyphase
Capacitor motors
Interchangeable frames
Bulletin No. 28 for details
THE LELAND ELECTRIC CO.
DAYTON·OHIO·U·S·A
CANADIAN ADDRESS TORONTO
CABLE ADDRESS LELECT
Leland Motors

be metallic or glass the first appearance of this dew is not hard to see.

For 100 per cent relative humidity the dry bulb temperature and the dew point are the same, but for any other relative humidity the dew point is lower than the dry bulb.



On the psychrometric chart the dew point for any air mixture can be found on the 100 per cent relative humidity curve directly to the left of the intersection of the wet and dry bulb temperatures. (See Fig. 6.) For example, air within an 80 degree dry bulb and a 70 degree wet bulb will have a dew point of 56 degrees.

If the dry bulb of this air were to be lowered without any change in the amount of water vapor present, dew would begin to appear at 56 degrees. At this latter temperature the relative humidity would have reached 100 per cent. If the temperature of the dry bulb for this mixture be decreased below 56 degrees more water vapor would separate out of the air and the dew would change to beads of moisture which would run down in streams over the exposed surfaces.

Fig. 9—The charts to the right are used to determine the number of glass sash required to prevent condensation. Take an inside temp. of 50 deg., an outside temp. of 10, a rel. hum. of 70 per cent and a single pane window. Condensation will occur on this window and also on a double window. But storm sashed double windows (Chart C) will prevent condensation

Should inside air, at the wet and dry bulbs just mentioned, come in contact with surfaces that have a temperature as low or lower than 56 degrees droplets of

moisture will form on these surfaces. This is what happens when the outside temperature is so low that the cold penetrates through the building. Quite naturally the same result is had on the outside surfaces of buildings when a temperature below the dew point of the outside air is reached within doors and the building insulation is insufficient to prevent the outward flow of cold. Such action is known as condensation.

Fig. 8—Where the relative humidity is lowered without changing the dry bulb the dew point falls. Where the dry bulb is raised without any other changes the dew point remains constant, but the per cent relative humidity falls. In the first case condensation is prevented by moisture removal while in the second the moisture in the air remains the same but the temperature difference increases

Condensation can be remedied in three different ways. Heat may be used to raise the dry bulb, moisture can be removed from the air and the relative humidity thus lowered or insulation can be supplied to reduce the flow of cold through the particular portion of the building where the trouble occurs.

Of all parts of buildings the windows afford the least protection against the flow of heat and cold. This is because glass is a very poor insulator for heat. A remedy for window condensation

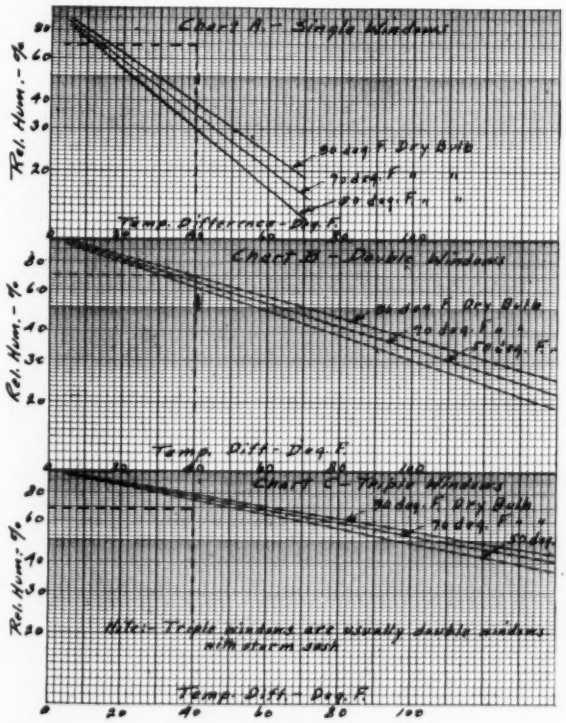
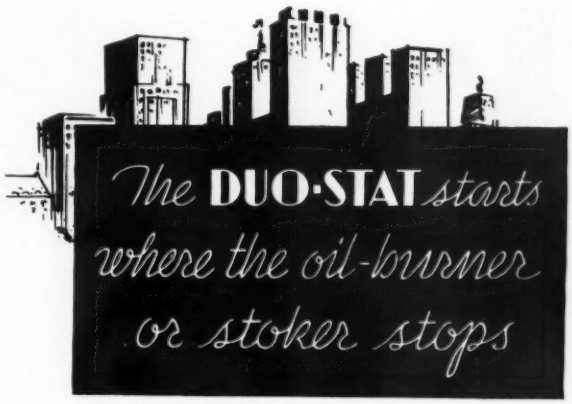


Chart A - Single Windows
Rel. Hum. - %
80 deg. F. Dry Bulb
70 deg. F. " "
60 deg. F. " "
Temp. Difference - Deg. F.
Chart B - Double Windows
Rel. Hum. - %
80 deg. F. Dry Bulb
70 deg. F. " "
60 deg. F. " "
Temp. Diff. - Deg. F.
Chart C - Triple Windows
80 deg. F. Dry Bulb
70 deg. F. " "
60 deg. F. " "
Rel. Hum. - %
Note - Triple windows are usually double windows with storm sash
Temp. Diff. - Deg. F.
0 20 40 60 80 100

is in the use of double windows or of double windows provided with storm sash. The latter case can be considered as equivalent to triple windows. Condensation charts for single, double and triple windows enable one to determine the number of sash necessary to prevent condensation, as in Fig. 9.



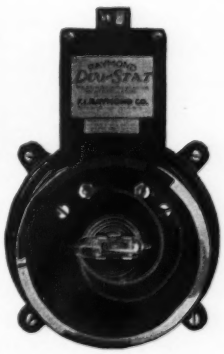
—Make it the "other half" of automatic heat!

The greatest value of a stoker or oil burner lies in the fact that it can be *controlled.* A stoker can cut the cost per pound of steam delivered—but it can't cut the number of pounds required. *Good* control can. It starts where the stoker stops. It completes the picture—often doubles the economy.

The Duo-Stat is rapidly becoming the standard of comparison for heat control systems. Its protected principle enables a moderately priced system to do what even the most expensive systems have been unable to do.

One bulb of the Duo-Stat is placed outside, the other on the last radiator of the longest main. The Duo-Stat constantly balances radiator temperature against outdoor temperature. Will it control all radiators alike? Will it accomplish partial filling and "throttle" down to mild weather requirements? Thousands of installations say YES! Ask for evidence.

You can install a complete automatic-heat plant *with* Duo-Stat control for less than the cost of many elaborate heat control systems *alone.*



Let us show you how you can make the Duo-Stat an entering wedge to profitable remodeling—how it can be made to lower sales resistance on stoker or oil-burner sales.

F. I. RAYMOND CO.
629 W. Washington Blvd.
Chicago, Illinois

RAYMOND

DUO-STAT

New Developments in Products for Dealers

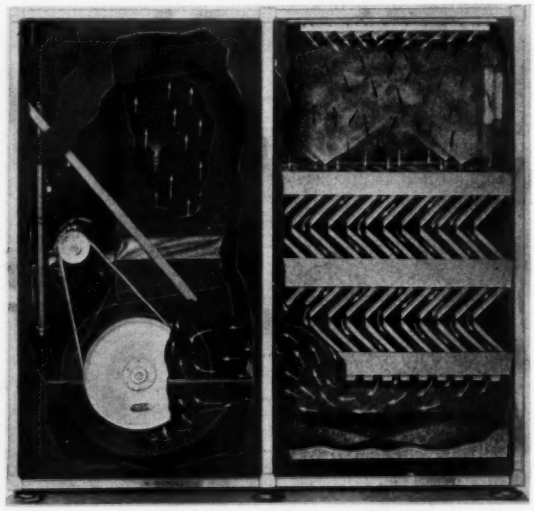
This section is set aside exclusively to give information on the latest in automatic heat and air conditioning products. Our numerous readers who are dealers in this field, or who soon may be, will find sales helps here among these selected items

Portable Humidifier Placed on Market

In the case of this portable humidifier the air is drawn in through the latticed screen grating at the top and is passed through a film of water. This action is designed to filter out the impurities, thus cleansing the air. Then the air is passed through the vapor chamber for the purpose of saturating it with moisture. The incoming air is made to force the humidified air out into the room. It is designed so as not to cause radio interference. The manufacturer is H. M. Sheer, located at Quincy, Illinois.

Air Conditioning Unit for Homes

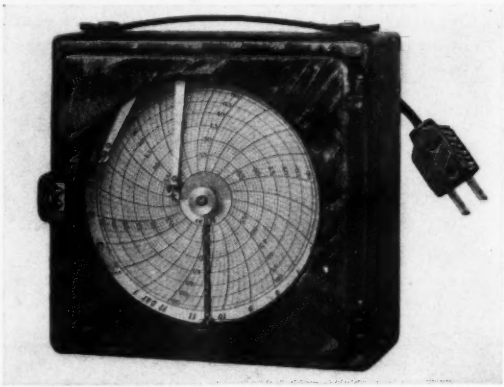
The air conditioning unit which is shown in the accompanying illustration is just being announced. It is available in two models. One model has a cubic foot per minute capacity which varies from 900 to 2,025 and a Btu. output of from 81,900 to 159,300. The larger size model has a capacity from 2,250 to 3,150 c.f.m. and a Btu. output of from 192,375 to 300,000. Both units have adjustable drives and firing devices. Each unit also is shipped completely assembled in two sections, each section being 30 in. by 36 in. by 66 in. The enamel jacket is in place and trimmed with polished aluminum trim and corner angles. A canvas connection is provided from the centrifugal blower to the duct connection. Both models require connections to circulating air ducts, electric and water lines and to the source of steam. The blower motor, the drive, all water and steam piping and the automatic control system adaptable to any automatic fire device are contained within the unit. The heat control has been designed for a 2 degree range. Positive humidity control to any desired point, correct air circulation and efficient air washing also have been provided for. The equipment may be connected to any standard refrigerating unit for positive temperature and humidity control during the summer months. The manufacturer is Air Conditioning Equipment Corporation, located at 257 Keefe Avenue, Milwaukee, Wisconsin.



A New Small Size Recording Thermometer

This small sized recording thermometer has just been placed on the market. It is for checking the performance of refrigerating, air conditioning or heating equipment as far as temperature and time operation is concerned. The equipment shown here is furnished in two forms, the single pen recording thermometer for charting temperature only, and the temperature and time operation recorder which writes a continuous record of

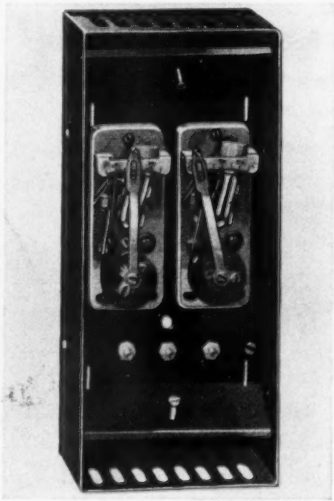
temperature as well as the running and idling time periods of the motor. It operates for any period of time up to 72 hours. The operation of the device is based on the closed thermostat tube system. The bellows is connected by a capillary tubing with a sensitive bulb which, in the self-contained type is located outside on the back of the case. A change in the temperature



at the bulb causes a corresponding expansion or contraction of the vapor in the closed system, thereby actuating the bellows. This motion is transmitted directly to the pen arm. The total weight is less than 3½ lb. The manufacturer is C. J. Tagliabue Mfg. Co., Park and Nostrand Aves., Brooklyn, New York.

An Infiltration Thermostat

A new type of thermostat designed to control the temperature in a room on the basis of temperature plus infiltration has been developed and a rear view of it is



shown here. The instrument is mounted at radiator height on an outside wall. The dampers which appear in the cut are adjustable and are intended to control the amount of air rising up through the thermostat;

1933

Profits will come from saleable merchandise

EXCELSO

Quality Water Heaters

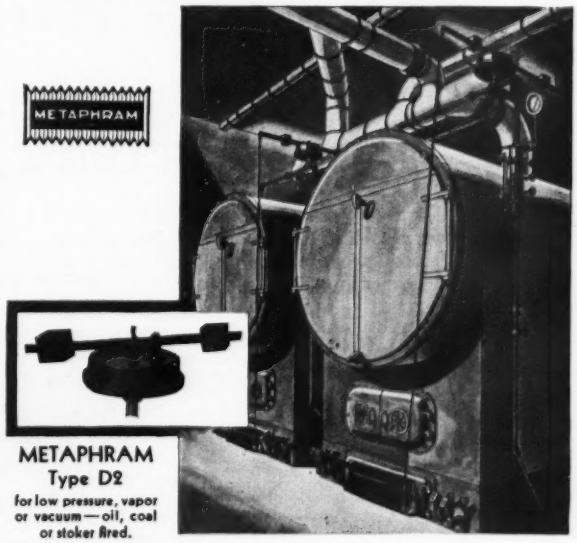
EXCELSO PRODUCTS CORP.

65 Clyde Avenue Buffalo, N. Y.

or

Ask Your Jobber

METAPHRAM



METAPHRAM
Type D2
for low pressure, vapor or vacuum — oil, coal or stoker fired.

METAPHRAM Gradual Control
covers the entire range of domestic hot water and low pressure boilers and tank heaters, either gas, oil or coal fired.

Descriptive Bulletins on Request

NATIONAL REGULATOR CO.
2317 KNOX AVENUE CHICAGO

Give yourself a NEW DEAL

There's money for you in Century Oil Burners. More sales, and more profit on each one. Floating Flame, a sensational principle of burning oil, is cleaner, quieter, and more economical. Makes the convenience of automatic oil heat actually cheaper than coal.

Every Century Burner is Factory Tested before shipment to prove its perfection and performance. Eliminates unnecessary installation and service work.

Give yourself a new deal. Get into this rapid growing industry now. Write at once for our SPECIAL DEALER OFFER—a chance to inspect Century first-hand without it costing you a cent. Act at once. CENTURY ENGINEERING CORP., Dept. D-1, CEDAR RAPIDS, IOWA.

One of America's Largest

Selling Oil Burners

CENTURY OIL BURNER Floating Flame

LISTED AS STANDARD BY UNDERWRITERS' LABORATORIES

Continue to get this service!

Thousands of heating contractors have found Automatic Heat filled with the kind of merchandising, technical and financial information that they wanted.

Now this section extends its services to take in Air Conditioning, a combination which is to revolutionize the American conception of comfort in the home and smaller business establishment.

Renew your subscription. Make certain that you will not miss a single issue.

Only Two Dollars a Year—Send in Your Renewal or Your New Subscription Now.

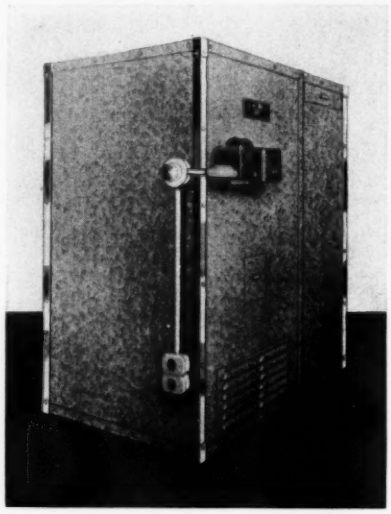
Automatic Heat
and
Air Conditioning Dealer
in
Domestic Engineering
1900 Prairie Avenue Chicago

adjustment is made when the control is installed.

There are two types—electrical and pneumatic—according to J. C. Hornung, 343 S. Dearborn St., Chicago, who is the manufacturer.

Unit for Filtering and Humidifying Air

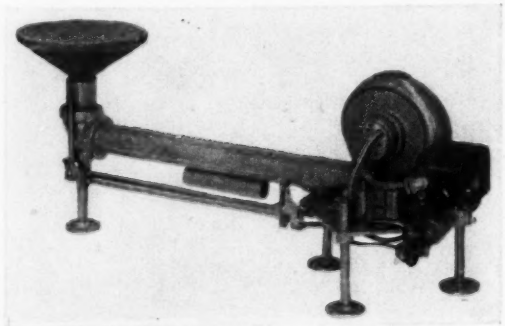
The unit which is shown here has been designed and placed on the market for the purpose of properly distributing filtering and humidifying air introduced by force into a home. The air to be treated flows counterflow to the gases in the heat interchanger section. The



air is introduced in the unit and travels over 27 lineal feet of heating surface. Air from the unit is introduced into the room at a height of 6½ ft. from the floor. The maker is The Edwards Manufacturing Co., located at Eggleston Avenue and Fourth Street, Cincinnati, Ohio.

Gas Burner Recently Announced

The gas burner which is shown in the accompanying illustration has just recently been placed on the market, for use in residential installations. It is of the conver-



sion type and has been designed to be simple to install and noiseless in its operation. The manufacturer is Schwan Gas Burner Company, located at 1207 S. Lamar Street, Dallas, Texas.

The New Electric Janitor is packed complete with motor, thermostat, external low voltage transformer and all necessary fittings. Thermostat operates on change of 2° F. or less. Con-Tac-Tor Mercury Switch assures positive action. Brushless induction motor requires no lubrication at any time. Equipped with basement switch for closing dampers when stoking.

MINNEAPOLIS HONEYWELL

Presents the

NEW AND IMPROVED

Electric Janitor

HERE it is—the new and improved Electric Janitor—a low priced damper regulator that you can recommend and sell with confidence. Priced at only $20.90 to the trade, the Electric Janitor is built to Minneapolis-Honeywell standards and quality. The low cost of this entirely electric control for all domestic coal fired heating plants makes every home, no matter how modest, a prospect, as it pays for itself over and over again in fuel savings, comfort, convenience and health.

The Electric Janitor has features ordinarily found only in more expensive regulators. It is Minneapolis-Honeywell through and through, is sturdy, simple and compact, easy to install, and once installed requires no service.

The Electric Janitor will sell itself on merit. Remember the quality, remember the price, and remember the name. Minneapolis-Honeywell Regulator Company, 2801 Fourth Avenue South, Minneapolis, Minnesota.

DEALER PRICE

$20.90 NET

ORDER THRU YOUR JOBBER

MINNEAPOLIS-HONEYWELL

Control Systems

DOMESTIC ENGINEERING
Automatic Heat and Air Conditioning Dealer Section

Let us introduce to you

AIR CONDITIONING FOR COMFORT

This Brand New Book Gives Sales Points—Complete Engineering Data —and a reliable Background for Your Knowledge of Air Conditioning

AIR CONDITIONING FOR COMFORT is brand new—the first complete book to give the "whys, hows and what withs" of engineering for conditioned air. It is written in concise, clear language that ably answers the flood of questions being asked about this big subject.

Its 256 pages are alive with the tables, diagrams and essential data which an engineer or contractor must have to properly estimate or design a job, be it skyscraper or cottage. They set forth the practical formulas for computing all the components of the various heating, cooling and de-humidifying systems.

Samuel R. Lewis, who wrote the book, is a pioneer in the development of the design of plants cooling for comfort, is past president of the American Society of Heating and Ventilating Engineers, and is a consulting engineer with an impressive record of large and small heating and cooling installations to his credit. Out of these achievements have come the exhaustive knowledge and qualifying experience which makes Mr. Lewis such an admirable choice to write this authoritative book on AIR CONDITIONING FOR COMFORT.

You have the opportunity at last of completely informing yourself on the merits of the various air conditioning systems. Send us $2.00 and AIR CONDITIONING FOR COMFORT will be mailed you promptly—with this additional promise—that if you do not want to keep it, you may return it within ten days and we will refund your money.

CONTENTS OF AIR CONDITIONING FOR COMFORT

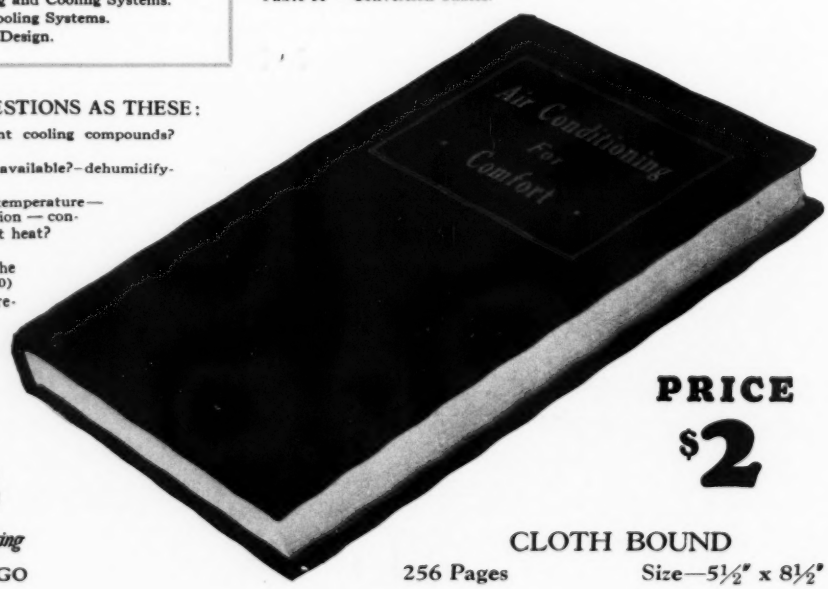
Chapter 1.—Explanation of Terminology.
Chapter 2.—Instruments of Service in Air Conditioning.
Chapter 3.—Relation of the Human Body to Air Conditioning.
Chapter 4.—The Influence of the Type of Heating System Upon Air Conditioning.
Chapter 5.—Heat Transmission Through Building Materials.
Chapter 6.—Calculations for Air Conditioning Requirements.
Chapter 7.—Sunshine, Evaporation, Air Leakage and Lighting.
Chapter 8.—Air Distribution Within Rooms of Cooling Systems.
Chapter 9.—Controlling the Temperature in Air Conditioning Systems.
Chapter 10.—Water Circulation in Heating and Cooling Systems.
Chapter 11.—Air Ducts in Heating and Cooling Systems.
Chapter 12.—Computations for an Actual Design.

36 Tables, 94 Figures, Charts and Diagrams in this New Book, of Which the Following Are Examples

Figure 4—Capillary type of humidifier.
Figure 11—Diagram of silica gel cycle for removing moisture from air.
Figure 16—Psychometric chart with comfort zone.
Figure 21—Utilization of city water for house cooling.
Figure 25—Coefficients of heat transmission through building materials.
Figure 42—Heat transmitted by evaporation.
Figure 54—Layout of a humidity and temperature control system.
Figure 62—Layout of a simple parallel return heating-cooling plant.
Table 1 —Mixtures of air and saturated water vapor.
Table 36 —Conversion Tables.

ANSWERS SCORES OF SUCH QUESTIONS AS THESE:

—What are the strong points of the different cooling compounds? (See page 26)
—What are the different humidifying devices available?—dehumidifying devices? (See page 8)
—What is relation of the human body to temperature—moisture — motion — chemicals — radiation — convection—evaporation—sensible and latent heat? (See page 42)
—What cooling system will work best with the various heating installations? (See page 60)
—How do you calculate air conditioning requirements? (See chapter 6)
—What is the reasonable temperature and humidity for satisfactory artificial cooling of living quarters? (See table 2)



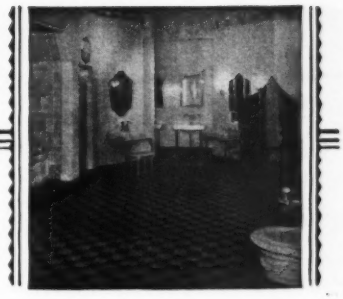
PRICE $2

DOMESTIC ENGINEERING
Plumbing & Heating Contracting and Merchandising
900 PRAIRIE AVENUE CHICAGO

CLOTH BOUND
256 Pages Size—5½" x 8½"

SUPPLY NEWS

FOR MANUFACTURERS, WHOLESALERS, SALESMEN



Badger Plumbing & Heating Supply Co. Ready for Business

Badger Plumbing & Heating Supply Co. is the name of a new company which has started in business at 2313 North Thirty-fourth street, Milwaukee, Wis. The new enterprise is headed by Fred Schoeffling and Frank Rogers.

Opens Warehouse in Philadelphia

The National Radiator Corporation of Johnstown, Pa., has just announced the opening of a new warehouse in the Milne building on Washington avenue, between Tenth and Eleventh streets, Philadelphia, where a complete stock of the company's boilers, radiators and specialties will be carried.

The Philadelphia sales office will remain in the Liberty Trust building at Broad and Arch streets, with L. R. Snelling in charge as branch manager.

Laib Co. Opens New Show Rooms

Laib Company of Louisville, Ky., has just opened new and elaborate exhibit rooms at 1534 Bardstown road in that city, where modern bathroom and kitchen exhibits and plumbing fixtures are on display. These rooms have been opened for the convenience of the public as well as the trade to present in complete detail several distinctive bathrooms in which the new mode of color finds full expression. The use of color, not only in the floor and walls, but also in the fixtures themselves, has made the bathroom and the kitchen rooms of beauty, among the most interesting in the house, and the result of these advances is well illustrated in these new show rooms.

Has Opened New Branch at Riverhead, L. I.

Haff Supply Co., Inc., jobbers of plumbing and heating supplies at Amityville, N. Y., has recently opened a branch at Riverhead, Long Island, N. Y., under the management of Herbert S. K. Munsie, who has been connected with this concern for several years.

New York Office of John Douglas Co. in New Location

The John Douglas Co. of Cincinnati, Ohio, has recently moved its New York office from 565 Fifth avenue to room 1130 at 101 Park avenue. This office is under the management of Carl Henzel, who was recently appointed to fill this position.

Kretschmer-Tredway Co. Opens New Show Room

The Kretschmer-Tredway Company of Dubuque, Iowa, has recently opened a new show room at Ninth and Washington streets in that city, featuring enameled ware and pottery in white and other colors; plumbers' brass goods; boilers for burning coal, wood and oil, and heating specialties.

The show room is a very large one. In long rows a variety of appliances and fixtures are arranged in an attractive array of colors and sizes and shapes.

Among the colored bathrooms, probably the green one attracts most attention. Light green mother-of-pearl is used in the fittings, and the fixtures are all of green enamel.

Much care has also been given to the display of kitchen sinks in several colors, as well as of several different metals.

Both city and out-of-town visitors have been invited to call and inspect the great display of plumbing and heating goods, and many have accepted the invitation. Several signs in the show room bear the legend: "Select your own dealer."

Pierce, Butler & Pierce Mfg. Corp. Being Reorganized

Pierce, Butler and Pierce Mfg. Corporation, one of the oldest companies in the heating industry, with its main office at 282 James street, Syracuse, N. Y., operating five plants and 18 jobbing branches, realized early last year that if the company were to be in position to compete in the low volume market on account of the decline in building operations, estimated at only 10 per cent of normal, it would be necessary to reconstruct its capital structure. A reorganization committee was appointed early in May, 1932, and a plan of reorganization was adopted. A large percentage of all classes of securities of the corporation have since been deposited with the Chase National Bank of New York City, as depositary. The reorganization is being carried forward under the direction of Irving N. Beeler, president of the corporation, and all the plants and branches are being operated as heretofore.

Tenth Annual Convention and National Oil Burner Show

The American Oil Burner Association, Inc., will hold its 10th annual convention and national oil burner show in Chicago, Ill., June 12-16, 1933, with headquarters at Hotel Stevens. Both the show and the convention meetings will be held in Hotel Stevens. Business sessions and other meetings are scheduled to be held in the morn-

ings, leaving the remainder of the day available for attendance at the show.

Arrangements have been made for 127 exhibit booths, ranging in price from $175 to $330, and the show will be open daily, as follows:

Monday, June 12, from 7 p. m. to 10:30 p. m., on the other four days, from 1:30 p. m. to 10:30 p. m.

S. S. Spencer Co. Moves Minneapolis Branch

S. S. Spencer Company of St. Paul and Minneapolis, Minn., has moved its Minneapolis office and show rooms from 208 East Lake street to 207-11 West Lake street. Charles E. Hill is manager of the Minneapolis branch.

Will Manufacture Oil Burners

The A-Z Oil Company of Montreal, Quebec, Canada, has been incorporated to manufacture oil burners and oil burning devices.

Opens Office at Rochester, N. Y.

Wm. B. Scaife & Sons Co. of Oakmont, Pa., manufacturer of water softening and purification systems, has opened a new sales and engineering office at 42 East avenue, Rochester, N. Y., under F. H. Wisewell.

Will Manufacture Boilers and Radiators

Hillis & Sons of Halifax, N. S., Canada, have incorporated their business with a capital of $75,000, to manufacture boilers, radiators and hot water heaters.

Richmond Radiator Co.'s New Appointees

Richmond Radiator Company, Inc., of New York City has recently made several new appointments, according to announcement issued by its president, W. G. Langford, as mentioned briefly in the December issue of DOMESTIC ENGINEERING:

Allen P. Livar has been appointed general sales manager of this company.

E. A. Schwerdtle has been made sales manager of its enameled ware division.

Don D. Smith has been appointed sales manager of this company's new pottery division.

Gould's Pumps, Inc., Buys Hydroil Corp.

Gould's Pumps, Inc., of Seneca Falls, N. Y., has just acquired the Hydroil Corporation at Lebanon, Ind., manufacturers of oil purifying apparatus. The Lebanon plant is being discontinued, and the business and equipment are being transferred to the Seneca Falls plant of the Gould company, which will continue the manufacture of the products of the Hydroil Corp.

Culbert Pipe & Fittings Co. Expanding

Culbert Pipe & Fittings Company of 170-172 Eighth street, Jersey City, N. J., has taken title to four factory units on a tract 210x208 ft. at West Side avenue and Fisk street in that city, moving in about Feb. 1.

Will Make Electric Refrigeration Units

Kold-Hold Mfg. Co. of Lansing, Mich., which was recently organized by Ransom E. Olds of that city, plans to manufacture units for the electric refrigeration industry, including equipment for transportation refrigeration storage, air conditioning equipment, etc. Mr. Olds will be chairman of the board of directors. Charles E. Ecker is president and treasurer, and W. G. Farnsworth is vice president and general manager.

Is Now Making Oil Burners

McDonald Metal Products Co., Ltd., has started to manufacture oil burners at its plant in Waterloo, Quebec, Canada. This is a new division of this company. Branch offices will be opened at Ottawa and Toronto.

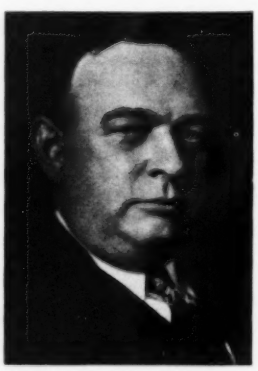
Mueller Brass Co. Secures Large Contracts

Mueller Brass Co. of Port Huron, Mich., has been awarded contracts to deliver fixtures and fittings for $9,000,000 worth of army buildings to be constructed by the United States government.

Central Western Credit Exchange Moves

D. R. Thomas, manager of the Central Western Credit Exchange, has just announced the removal of

Allen P. Livar
General Sales Manager

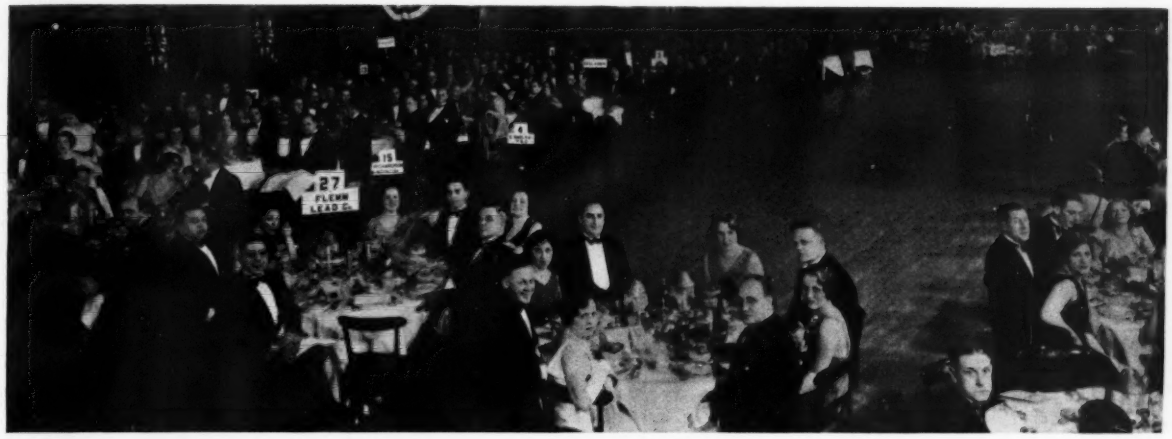


E. A. Schwerdtle
Sales Manager, Enameled Ware Division

Don D. Smith
Sales Manager, Pottery Division

NEWLY APPOINTED OFFICERS OF RICHMOND RADIATOR CO.

W. G. Langford
President
Richmond Radiator Co.



The eighth annual gala dinner of the Jobbers' Credit Association of Greater New York at the Hotel Commodore in New York City

his office from 1000 Builders Exchange to 5748 Nicollet avenue, Minneapolis, Minn.

Lawrence Pump & Engine Co. Opens Office in St. Louis

Lawrence Pump & Engine Co., of Lawrence, Mass., has just opened an office in the Mart building at Twelfth and Spruce streets in St. Louis, Mo., under the supervision of George Myers, a graduate in mechanical engineering from the Drexel Institute, who has had considerable experience in heating, ventilating and air conditioning.

Rawlplug Cleveland Office and Warehouse in New Location

The Rawlplug Company, Inc., of New York City, has just announced the removal of its office and warehouse in Cleveland, Ohio, from 2032 East Twenty-second street to larger quarters at 1315 West Sixth street, where a complete line of its products, screw anchors and holding devices, will be carried.

Will Represent Manufacturers of Specialties

C. G. Herbert Company has been organized and has started in business at 2400 South Seventh street, Minneapolis, Minn., to represent several manufacturers of plumbing and heating specialties.

Appointed Sales Representatives for Rome Radiation Co.

Rome Radiation Company, Division of Revere Copper and Brass, Inc., of Rome, N. Y., has appointed representatives for the sale of its convectors as follows:

George T. Underwood, Jr., 425 Sharp building, Lincoln, Neb., to cover the western portion of Iowa, all of Nebraska, except seven western counties, and the southern half of South Dakota.

H. M. Crawford and A. E. Care, operating as Fuel Saving Engineers, Inc., at 1556 North Farwell avenue, Milwaukee, Wis., to cover the eastern portion of Wisconsin and the upper peninsula of Michigan.

Jobbers' Credit Association, Inc., of New York Holds Eighth Annual Gala Dinner and Dance

One of the outstanding social events of the plumbing and heating industry of Greater New York was held Saturday evening, December 10th, in the Grand Ballroom at the Hotel Commodore in New York City. This gala affair marks the eighth annual dinner and dance held under the auspices of the Jobbers Credit Association, Inc., of the Metropolitan Area.

All the guests assembled in the foyer before the dinner hour, where old acquaintances were renewed, and new ones made. Under clever scenic effects the stage was set for "A Night in Havana" with the Intimate Four serenading the various tables in true Havana style. Jimmie Caruso and his Piping Rock Orchestra furnished the music together with a few radio artists.

A floor show presented as flashes of 1932 included thirteen acts featuring many famous dancers and singers from popular New York clubs and shows.

A splendid dinner was served to four hundred guests, including representatives from both jobbers and manufacturers of the metropolitan district, and leaders of various industries from different parts of the country.

Much credit was given to T. Arthur Johnson, chairman of the dinner committee, who worked very hard to make the dinner a grand success, and was in turn given whole-hearted cooperation from everyone.

The officers of the association are: Milton M. Goldsmith, president; S. C. Breihof, first vice president; E. E. Basch, second vice president; W. A. Doncourt, third vice president; Edward Schwartz, treasurer; Glenn B. Van Buren, secretary.

The dinner committee was composed of T. Arthur Johnson, of J. D. Johnson Co., Inc., chairman; Elmer Doolittle, Central Plumbers Sup. Co.; A. M. Behrer, Behrer & Co., Inc.; P. R. Mork, Crane Co.; Milton M. Goldsmith, Sam S. Glauber, Inc.; J. Ryan, Pierce, Butler & Pierce Mfg. Corp.; E. E. Basch, Regent Plumbers Sup. Co., Inc.; Henry Gasner, Saltser & Weinsier, Inc.; Mortimer Smolka, E. Smolka Plumbing Sup. Co.; Edward Schwartz, E. Schwartz Plumbing Supply Co., Inc.; William Maxwell, Clinton Plumbing Supply Co., Inc.; and John Harmon of Nason Manufacturing Co.

BUSINESS PERSONALS

M. J. CZARNIECKI, formerly manager of tubular sales of A. M. Byers Company of Pittsburgh, Pa., has been appointed general manager of sales. In announcing the promotion H. W. Rinearson, vice president of the company, stated that the move had been necessitated by the departmentalizing of sales activities due to the increased variety of wrought iron products developed by A. M. Byers Company within the past year. For sixty-eight years the company manufactured principally wrought iron tubular goods but has more recently broadened its wrought iron products to include plates, sheets, structurals, rivets, forging iron and welding fittings, etc.

IRVING L. JONES, president of the International Heater Company of Utica, N. Y., has been elected vice chairman of the Better Business Bureau in that city.

THOS. J. DORSEY, past president of the Manhattan Branch of New York Master Plumbers' Association, recently delivered an address on "The Importance of Plumbing" before a group of architects at a building trade dinner in New York City.

R. H. GARRISON, former general sales manager for the Universal Motor Company of Oshkosh, Wis., has become associated with the Marble-Card Electric Company of Gladstone, Mich., as vice president and sales manager.

A. M. MADDOCK of Trenton, N. J., vice president of the Standard Sanitary Manufacturing Co., has been elected a director of the New York and Long Branch Railroad Co., a subsidiary of the Pennsylvania Railroad Co.

E. J. HAYDEN, central division manager of the Linde Air Products Co. of Chicago, Ill., was elected president of the International Acetylene Association at its annual meeting which was held recently in Philadelphia. Mr. Hayden was formerly vice president of the association.

JOSEPH CUSHING, formerly manager of the Worcester, Mass., branch of Crane Co. of Chicago, is now associated with the Meacham Supply Co. of Worcester, Mass., as buyer for its heating department.

D. W. MCLENEGAN has been appointed assistant engineer of the commercial engineering division of the air conditioning department of the General Electric Company of New York City, according to announcement issued by J. J. Donovan, manager of the department.

ALLEN J. BLACKHALL, formerly New England representative for the H. B. Smith Co. of Westfield, Mass., has been appointed New England manager for the Buckeye Blower Co. of Columbus, Ohio, succeeding James Driscoll.

J. L. STULSAFT has been appointed representative in the New Jersey and Staten Island territories for the Woodbridge Ceramic Corp. of Woodbridge, N. J. Mr. Stulsaft is the present representative for that company in the Metropolitan New York City district, which he will continue to cover in addition to the new territory allotted to him. Robert J. Howell is the New Jersey representative for the Stulsaft sales organization.

JULES E. STRONG, president of the Strong Heating Co. of St. Louis, Mo., has been made acting mayor of Clayton, Mo., having been elected president of the board of aldermen in that city. Mr. Strong succeeds Mayor Edwin F. Stockho, who died recently, and he will serve until the city election in April, when a mayor will be chosen to fill a one-year unexpired term. Mr. Strong is also vice president of the Clayton National Bank.

E. K. BLACKFORD, formerly with Walworth Co.'s Seattle branch and more recently with the Northwest Plumbing Supply Co., has been selected to fill the position made vacant by the removal of A. G. Oakley of the Youngstown Sheet & Tube Co. from Seattle to California, where he will represent the same concern.

Edgar R. Troxell, Jr.

EDGAR R. TROXELL, JR., formerly New York manager for Spencer Heater Co. of Williamsport, Pa., for twenty years, has been appointed sales manager for J. H. McCormick & Co., manufacturers of air conditioning systems and devices at Williamsport, Pa. Mr. Troxell has already entered upon his new duties with headquarters at 4305 Chrysler Building, New York City. Mr. Troxell graduated from Yale in Mechanical Engineering and worked for nine years in the steel mills at Scranton and Pittsburgh before he became connected with the Spencer Heater Co.

ELMER STACK, Boston, Mass., consulting engineer on domestic hot water heating, recently gave an interesting talk before Massachusetts Fire Chiefs' Association at Springfield on range boilers for water heating. Mr. Stack urged that state laws and regulations be considered covering the proper installation of all range boilers used for heating water in homes. About 125 fire chiefs were in attendance. So much interest was shown in Mr. Stack's subject that he is scheduled to make the same address before the Boston Rotary Club in January.

CAPTAIN FREDERICK SCHAUSS has been appointed manager of the Anchor Post Fence Co.'s oil burner factory branch at Baltimore, Md.

EDWARD B. GROSSMAN, European manager of the May Oil Burner Corporation of Baltimore, Md., is now on his annual visit to the factory in that city. This time Mr. Grossman brought much interesting material as during the past year he obtained the contract to equip most of the buildings in the New Vatican City, and he obtained views taken in the Vatican by special permission of the governor of that city, Camillo Serafini. This is said to be the first time that any cinema has been allowed within the Vatican. He also brought over films of other important oil burner installations in Europe, including Christchurch, St. Johns and New Colleges in Oxford,

skyscrapers in Belgium, art buildings in Holland, business houses in Norway and homes in Switzerland. Mr. Grossman will remain in this country until February, when he will return to resume charge of the Quiet May European Office at 15, rue de la Paix, Paris, France.

L. D. HARNETT of Columbus, Ohio, has been appointed Ohio State sales supervisor for the Trane Company of La Crosse, Wis. Mr. Harnett has been active in the heating and ventilating field for many years in connection with the Columbus Heating and Ventilating Co. and as president of the Buckeye Blower Company of Columbus, Ohio.

KARL RUGART, manufacturers' representative in Philadelphia, has recently moved into larger offices at 158 North Twentieth street in that city.

DONALD G. DAY has been appointed sales representative for the oil burner division of the Anchor Post Fence Co. of Baltimore, Md. He has been assigned to the New England territory with headquarters at the company's branch office in Boston.

M. E. DEEDS, Chicago representative for the Abingdon Sanitary Mfg. Co. of Abingdon, Ill., has been appointed Chicago representative for the American Sanitary Mfg. Co., also of Abingdon, Ill. He assumed his new duties on January 1. He will continue to serve the Abingdon Sanitary Mfg. Co. His headquarters in Chicago are at 3839 Janssen avenue.

A. A. Ahlff

A. A. AHLFF has been appointed New York sales manager for the Spencer Heater Company of Williamsport, Pa., and assumed his new duties January 1. Mr. Ahlff has been identified with the boiler and radiator business for many years and has had charge of Spencer Heater Co.'s sales in the Buffalo territory for the past seven years. He will continue the policy of distributing with co-operation of a limited number of selected dealers in plumbing and heating materials and only through the trade.

C. FUSON of 1003 Fidelity Bank Building, Memphis, Tenn., has been appointed sales representative for Dail Steel Products Company of Lansing, Mich., manufacturer of air conditioners and heating appliances. Mr. Fuson will cover the western portion of Tennessee, including Memphis, also the eastern portion of Arkansas as far west as Little Rock, Mississippi as far south as Greenville, and the southwestern portion of the state of Kentucky.

Merritt W. DeLong, for many years a member of the plumbing firm of Devendorf & DeLong in Watertown, N. Y., died recently at his home in that city, in his 85th year.

Look to a Line that's

SELLING

For BUSINESS in '33

1933 will be a year of remodelling! Current estimates, based on accurate surveys of actual and proposed building, indicate that 25% of the money available for all construction will be spent in ***modernizing.*** And that's a huge amount for any year—regardless of conditions!

Will you make the most of this opportunity? Will you equip yourself to cash in on this ready business with a line ***that's selling?***

Get the facts. While other sales lag, schools, hotels, clubs and other institutions as well as home owners are installing Weis Shower Cabinets because:

1 **Their unique design makes showers possible in thousands of places where showers previously could not be considered;**

2 **Their moderate cost is appealing;**

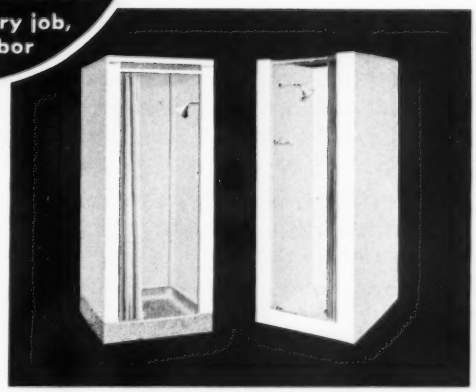
3 **The shower idea is universally popular.**

Ask your plumbing supply jobber for full particulars—or write to us.

From $12.50 TO $24.00 EXTRA PROFIT on every job, plus labor

WEIS

ESTABLISHED 1876



HENRY WEIS MANUFACTURING CO., INC.

900 Oak St., Elkhart, Indiana

Meet a plumber AND A SALESMAN

WHEN this man goes out to repair some plumbing, he usually sells replacements instead! The result . . . more profits to every one concerned. *He* profits by the boss's approval. The *boss* profits by the sale. And the *customer* profits by long-term, instead of temporary, results.

Are *your* workmen, and you yourself, taking full advantage of every opportunity to sell the home owner and business man? And are you using Scovill plumbing equipment to help make sales and keep customers sold?

The Scovill line of flush valves and fittings offers maximum quality at minimum price. Materials, design, and workmanship make for service and satisfaction. Ask your jobber for full information. And get on our mailing list for "Ampinco Pete," a bright little booklet full of helpful pointers for plumbing contractors. Free each month if you write to:

SCOVILL MANUFACTURING COMPANY
PLUMBERS' BRASS GOODS DIVISION
WATERVILLE • CONNECTICUT

Scovill Flush Valves—Shower, Bath and Lavatory Fittings—Tubular and Miscellaneous Plumbers' Brass Goods

SCOVILL

Profitable *replacements* instead of petty *repairs*

Appointed Sales Agents for American Rubber Products Company

American Rubber Products Co. of Detroit, Mich., manufacturer of closet seats, has just announced the appointment of the following sales agents in the territories indicated:

Cook & Walther, 230 North Canal street, Chicago, Ill.—Northern Illinois and western Indiana.

B. F. Edelback, 409 Tenth street, South, St. Cloud, Minn.—Iowa, Nebraska and Minnesota.

Thomas Price, 1009 Isabella street, Houston, Tex.—Texas and Mexico.

F. F. Franchina, 1027 Magazine street, New Orleans, La.—Alabama, Mississippi and Louisiana.

C. W. Cromb, Bourse building, Philadelphia.—Eastern Pennsylvania, southern New Jersey, Delaware, eastern Maryland and the District of Columbia.

Rivard & Gallagher Co., B. M. A. building, Kansas City, Mo.—Kansas, Missouri, Oklahoma and Arkansas.

C. H. Bodley, 74 Harold street, Melrose, Mass.—Eastern Connecticut, Massachusetts and Rhode Island.

Western Trade Golf Association Elects 1933 Officers

The Western Trade Golf Association of Chicago held its annual meeting at the Medinah Athletic Club on December 1 and got ready for its 1933 season by electing as officers J. H. Milliken, American Air Filters, Inc., president; George H. Dickerson, Mehring & Hanson Co, vice president; John A. Corboy, M. J. Corboy Co., captain; Elmer W. Rietz, Powers Regulator Co., treasurer; John Howatt, Chicago Board of Education, handicapper, and C. E. Price, Engineering Publications, Inc., secretary. The 1932 season, under the guidance of M. G. Henderson, Youngstown Sheet & Tube Co., retiring president, was recorded as one of the most successful in the association's long life, from the viewpoint of attendance, high grade courses played and active interest in association affairs on the part of members.

R. R. Hicks Honored with Farewell Party

R. R. Hicks, former manager of the N. O. Nelson Mfg. Co.'s branch at Davenport, Iowa, was honored by Iowa wholesalers with a farewell luncheon at the Blackhawk Hotel in Davenport on Wednesday, December 14, on the occasion of his departure from that city and the Iowa territory. As a token of the high esteem in which Mr. Hicks is held by his contemporaries in the industry, they presented him and Mrs. Hicks with an electric coffee maker. E. I. Leighton of Fort Dodge was chairman and made the presentation in a most novel and unique manner so that neither Mr. nor Mrs. Hicks were aware of the final presentation until, on motion, F. N. Kretschmer, in his versatile manner, made the disclosure.

Many of the Iowa wholesalers, who were present, were accompanied by their wives. Among out-of-town guests in attendance were: J. C. McEwen, general manager of the N. O. Nelson Mfg. Co. of St. Louis, Mo.; W. E. McCollum, secretary of Central Supply Association, Chicago; O. R. Manners of Manners-Motz Co. of St. Paul, and D. R. Thomas, manager of the Central Western Credit Exchange, Minneapolis.

Edwin Ruud Dies in His 79th Year

Edwin Ruud, founder and president of the Ruud Manufacturing Co., manufacturers of gas water heaters in Pittsburgh, Pa., died at his home in that city on Friday, December 9, after a long illness, in his 79th year.

Mr. Ruud was born in Norway on June 9, 1854, and learned the machinist's trade in that country. He came to America in 1880 and entered the employ of William Sellers Works in Philadelphia. Two years later he went

Edwin Ruud

to work for the Pennsylvania Railroad in its shops at Altoona, Pa., where he remained until 1885, when he became connected with the Reading Iron Works, Reading, Pa. After two years in Reading, Mr. Ruud went to Pittsburgh to become associated with George Westinghouse, to supervise the construction of gas appliances and other heating devices.

After leaving George Westinghouse in 1888, Mr. Ruud invented a gas water heater, and soon afterward organized and established the manufacturing company which bears his name and of which he remained president until his death.

From time to time Mr. Ruud made improvements in his gas water heaters with the result that the business grew steadily and his accomplishments in heating engineering became known throughout the world. Some years ago King Haakon of Norway honored Mr. Ruud by conferring upon him the Order of Olaf.

The honorary pallbearers at Mr. Ruud's funeral were: A. P. Brill, H. T. Peterson, H. R. Basford, C. E. Bartlett, A. H. Wardwell, G. H. Steugel, E. B. Scull, Max Cartall, E. C. A. Bliault, Henry Meyer, George Hobbs, J. C. Dyer, W. H. Kapus, H. S. Humphrey and F. A. Lemke.

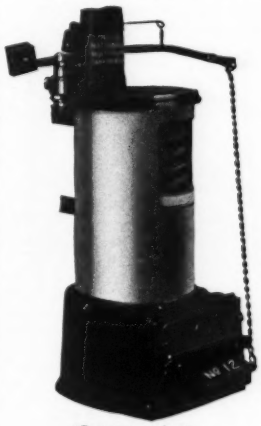
In his will, Mr. Ruud made liberal bequests to charity. He also bequeathed to each ten-year employe in his company $1,000, and to each 20-year employe, $2,000.

Mr. Ruud is survived by his wife and a stepson, John Henry Sorg, an attorney in Pittsburgh, and two sisters in Norway.

THE MULTI-FLOW'S
COPPER COIL
ABSORBS HEAT FASTER

150° HOT WATER 24 HOURS PER DAY

produced FASTER with copper coil which absorbs most heat from fuel. Bronze fittings; ideal for use with brass pipe hot water lines. Burns coal, needs scant attention in average home. Cost of operation low. Triangular grates. Firebrick combustion chamber. Red vitreous enamel jacket. Heater and installation allow good profit. Write for information or see your jobber.



(Cut away view)
Aqua-Matic Regulator
Outfit Controls Fire
2 to 3 days without fueling
in average family.

MULTI-FLOW
TANK HEATER

Manufactured by
THE NATIONAL PIPE
BENDING CO.
Est. 1883

174 River Street
New Haven, Conn.

Storage Heaters, Instantaneous Heaters, Feed Water Heaters Coils, Bends

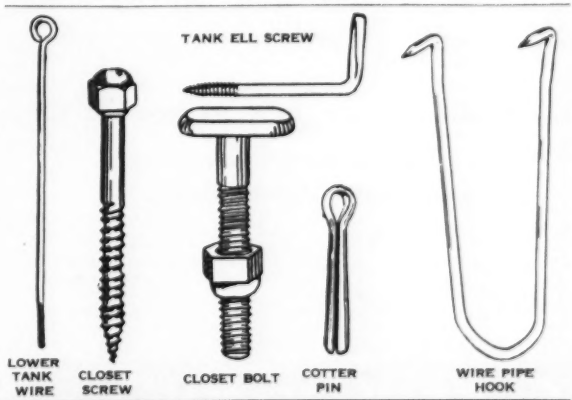
FREE FLO Heating Element

BOSTON NEW YORK PHILADELPHIA

• HINDLEY'S •

« « AT the conclusion of every year it is always interesting to look back at those achievements that have been profitable to you. If you have taken on Hindley's Plumbers' Specialties, that is one achievement that can be written down in black ink. If you have not, then **now**, is the time to learn about this most complete line. See the Hindley Line in the Domestic Engineering Plumbing and Heating Catalog and then, for the sake of good business in 1933, get acquainted.

HINDLEY MFG. CO., VALLEY FALLS, R. I.



SPECIALTIES

Sift out the old Range Boilers and Storage Tanks in your Neighborhood—

Money isn't so tight today but what you can still sell a money-saving idea to the home-owner. What better suggestion could you make than to throw out old, rusty range boilers and storage tanks.

. . . . and replace them with one of KOVEN make!

Tell your customers that the Quality is high—but not the price. Show them where it's economy to have clean, quick-heating range boilers and storage tanks. Point out the convenience—the clean water—the freedom from nuisance. But above all

. . . . make sure it's a KOVEN!

Then you will both be satisfied! Ask your jobber.

KOVEN QUALITY PRODUCTS

Range Boilers
Storage Tanks
Koven-Paracoil Tanks
Septic Tanks

TRADE MARK
L.O.K. & BRO. INC.

Fuel Oil Tanks
Expansion Tanks
Pneumatic Tanks
Barber Boilers
Scullery Sinks

L.O. KOVEN & BRO. Inc.
154 OGDEN AVE. JERSEY CITY, N.J.

Edwin M. Herr Dies at 72

Edwin M. Herr, vice chairman of the board of directors of the Westinghouse Electric & Manufacturing Company of East Pittsburgh, Pa., died at his home, 1035 Fifth avenue, New York City, December 24, in his 73rd year. Mr. Herr was president of the Westinghouse Electric & Mfg. Co. from 1911 to 1929, when he became vice chairman of the company's board of directors. He was also a director of the American Manufacturers Export Association, the Radio Corporation of America, Westinghouse Airbrake Company, and many other organizations. In 1920 he was decorated by the Emperor of Japan with the Order of the Rising Sun in recognition of his interest in training Japanese students at the Westinghouse works and of the company's aid in the electrical development of Japan. His widow, a sister and two brothers survive him.

Willard C. Chamberlin Dies in California

Willard C. Chamberlin, formerly vice president of the Standard Sanitary Mfg. Co. of Pittsburgh, Pa., died recently at his home in San Mateo, Calif. Mr. Chamberlin became associated with the Standard Sanitary Mfg. Co. in April, 1907, as salesman in its Boston office. In June, 1910, he was made manager of the company's San Francisco office, a position he filled until January 1, 1916, when he was appointed general manager of the Pacific Division. On January 1, 1920, he was appointed general sales manager of the entire company with headquarters at its general offices in Pittsburgh. On February 1, 1924, he was elected vice president, and four years later he was appointed director of the company's European operations. He resigned May 1, 1928, and retired from business.

Death of R. M. Horsey

Richard McSherry Horsey, president of the Eastern Sanitary Supply Co. of Baltimore, Md., died Wednesday, December 14, at his office at 2611 Woodbrook avenue in that city. Death was caused by the accidental escape of gas from a gas heater.

Mr. Horsey was born in Baltimore 59 years ago, and he spent his entire life in that city. He had been engaged in the plumbing and supply business nearly forty years. His wife, four sons and two daughters survive him.

Death of Joseph E. Bachelder

Joseph E. Bachelder, formerly vice president of Fairbanks, Morse & Co. of Chicago, died at his home in that city on December 12, in his 76th year. He joined the pump department of Fairbanks, Morse & Co. in 1901 and became general sales manager of that department soon afterward. Before he became associated with Fairbanks, Morse & Co., he was connected with the Deane Steam Pump Co. and the International Steam Pump Co. He retired from business some years ago.

Death of George W. Crane

George W. Crane, former manager of the heating department of W. A. Case & Son Mfg. Co. of Buffalo, N. Y., died recently at his home in Syracuse, N. Y., after a year's illness, in his 56th year.

$1,683,656 of Gas Appliances Sold by Dealer-Help Plan

By HUGH H. CUTHRELL*

MONTH after month, the approved gas appliance sales of dealers in the Brooklyn Union Gas Co. territory have shown increases over the corresponding month of the previous year. This desirable condition has been characteristic of the dealer movement since its inauguration here. Of the dealers participating in this movement, about 85 per cent are plumbing and heating contractors.

We have reason to be proud of the results of our dealer-co-operation plan which was adopted in June, 1929. During the period up to and including November 30, 1932, purchases of approved gas appliances by dealers have totaled $1,134,293.63. In addition, a total of $549,362.89 worth of appliance sales resulted from leads to customers turned in to our sales force by dealers.

It might be argued by those indifferent to the co-operative plan that the business originating with the dealer would come to the utility through other channels and that in paying the dealer for his assistance we are merely opening up one more avenue to the sales field without in any way broadening that field. But our figures show conclusively that the dealers' contribution to our total business is something over and above what would have otherwise been secured and represents a distinct gain through the widening of our field of operations.

The success we have achieved in Brooklyn under our plan we attribute to the equity of the plan itself and to the intelligent and whole-hearted support given it by the rank and file of our sales organization.

In Brooklyn, we have reinforced our plan by aiding the dealer in his merchandising work, by consigning appliances for display in his show windows and on his sales floor, by assisting him with advertising material, by conducting sales training classes for him and by broadcasting to the public through the medium of a widespread advertising campaign the message that a dealer who displays the "Great American Servant" symbol sells only approved gas appliances.

The results of our efforts and those of the dealers are shown in the following tables of dealer purchases and sales through dealer leads:

DEALERS' PURCHASES

	1929	1930	1931	1932
January	.....	$ 8,692.02	$14,817.09	$21,490.15
February	.....	9,634.63	10,524.80	23,422.53
March	.....	13,628.69	26,514.74	32,706.75
April	.....	22,282.61	29,966.07	50,726.39
May	.....	24,474.30	31,268.33	41,402.48
June	.....	18,981.03	29,746.43	54,670.07
July	$7,067.28	16,380.33	32,253.89	44,700.84
August	2,893.40	16,181.77	34,997.11	43,828.27
September	16,972.33	28,614.17	53,520.03	48,418.88
October	18,619.73	36,311.13	49,745.78	40,749.61
November	16,673.00	23,639.26	38,601.65	27,849.07
December	15,329.00	20,776.84	35,221.15	.....
Total	$77,554.74	$239,596.78	$387,177.07	

SALES THROUGH DEALERS' LEADS

	1929	1930	1931	1932
January	.....	$7,422.94	$18,183.25	$15,909.85
February	.....	2,666.17	4,867.80	10,608.02
March	.....	4,286.56	22,174.23	32,726.81
April	.....	5,007.40	7,308.15	16,552.40
May	.....	14,121.66	5,677.39	23,303.04
June	.....	14,900.63	23,081.17	17,018.08
July	$549.13	8,233.66	22,087.30	7,672.42
August	514.35	6,084.13	25,599.10	11,920.06
September	.....	17,360.84	34,877.08	11,122.83
October	2,741.30	24,775.90	31,591.86	12,675.58
November	2,103.72	12,338.20	25,015.89	9,439.72
December	6,081.45	8,680.32	22,682.50	.....
Total	$11,989.95	$125,878.41	$243,145.72	

Last year's dealer business is further broken down for the three principal appliances—ranges, refrigerators and water heaters—into dealers' direct purchases, dealers' sales to customers upon which we carry the paper and sales through dealers' leads:

DEALERS' PURCHASES

1932

	Ranges	Refrigerators	Water Heaters
January	$4,574.56	$3,130.71	$ 987.55
February	4,075.96	3,925.88	1,358.11
March	7,247.72	4,908.97	1,196.37
April	5,614.77	8,925.49	1,516.61
May	6,055.68	10,226.32	2,513.46
June	4,140.95	13,394.87	1,930.75
July	4,228.50	9,077.50	1,285.04
August	6,442.83	7,564.71	673.32
September	8,921.07	11,076.85	610.42
October	6,988.18	8,785.73	1,280.67
November	8,207.89	5,330.58	773.23

AGENTS' SALES

	Ranges	Refrigerators	Water Heaters
January	$2,307.65	$8,050.25	$2,013.20
February	1,601.50	9,288.00	2,611.00
March	4,532.55	10,765.75	3,107.75
April	5,031.50	23,661.00	5,362.25
May	3,144.00	17,617.50	6,716.60
June	4,008.35	24,763.00	7,625.00
July	4,696.80	21,367.00	3,539.25
August	6,346.75	18,872.45	3,033.50
September	7,088.52	16,932.25	3,169.75
October	6,815.45	11,393.45	2,190.25
November	6,514.00	4,286.00	1,806.75

SALES THROUGH DEALERS' LEADS

	Ranges	Refrigerators	Water Heaters
January	$1,131.25	$13,786.90	$853.90
February	644.14	8,830.05	859.26
March	1,305.27	30,813.04	531.25
April	1,483.25	12,363.28	1,753.00
May	941.24	21,500.80	861.00
June	2,811.33	12,481.25	2,200.50
July	1,142.24	6,013.68	94.50
August	1,611.61	9,200.95	428.50
September	2,173.79	7,951.09	298.00
October	1,338.38	9,576.00	347.75
November	1,526.49	6,979.78	184.50

Last year we started a new feature in connection with dealer-cooperation. We appointed five plumbers to act as special representatives of our company in collecting

*Mr. Cuthrell is manager of the New Business Department of the Brooklyn Union Gas Company.

gas bill payments, signing contracts for service and transacting other similar business.

Through this plan the company's customers are brought into the plumber's place of business, affording him a contact with these customers with whom he may have future business in appliance sales and plumbing jobs.

Two of these representatives, George W. Harrington, 60-10 Roosevelt Ave., Woodside, and Philip H. Maher, 188-28 Central Avenue, St. Albans, were chosen on March 1 and the third, Fred G. Zweygart, 212-31 Jamaica Avenue, Queens Village, on May 4. A fourth plumber, Miner M. Smith, of 92-12 Jamaica Avenue, started as a special representative on October 1. The fifth is Edward Ruhl, 99-09 Northern Boulevard, Corona. All five are located in Queens County.

The following tables show the number of gas bills collected by these plumbers and the number of their appliance sales:

GAS BILLS COLLECTED

	Harrington		Maher		Zweygart	
	No.	Amount	No.	Amount	No.	Amount
March	3,074	$ 8,265.11	547	$1,819.36	....	.....
April	5,135	11,127.27	823	2,528.04	....	.....
May	4,409	12,095.64	899	2,989.57	557	$1,812.91
June	4,825	13,267.33	1,188	4,240.98	1,163	3,953.24
July	5,193	14,039.44	1,276	4,826.87	1,736	6,263.28
August	5,082	12,932.54	1,349	4,545.94	1,988	6,465.77
September	4,118	10,413.73	1,190	4,081.14	2,183	6,992.33
October	4,331	11,384.97	1,296	4,561.05	2,440	8,273.74
November	4,559	12,441.17	1,273	4,554.48	2,565	8,459.80

Mr. Smith collected 4,717 bills in October, amounting to $13,936.33; and he collected 2,323 bills in November, amounting to $7,226.34.

Mr. Ruhl collected 518 bills from November 16 to 30. These amounted to $1,558.21.

APPLIANCE SALES

	Harrington	
	No.	Selling Price
March	8	$1,093.64
April	8	1,094.05
May	8	1,051.00
June	9	1,435.00
July	7	449.55
August	11	1,202.50
September	8	420.75
October	15	784.25
November	7	647.20

APPLIANCE SALES

	Maher	
	No.	Selling Price
March	5	$319.95
April	7	1,540.25
May	8	1,583.25
June	11	1,242.15
July	10	1,237.54
August	5	504.40
September	1	89.50
October	1	58.25
November	..	.....

APPLIANCE SALES

	Zweygart	
	No.	Selling Price
May	13	$1,212.75
June	9	1,049.93
July	14	1,106.76
August	12	873.50
September	13	1,532.25
October	1	89.50
November	19	834.50

Mr. Smith sold 4 appliances in October for $378.25, and 10 appliances in November for $1,060.63.

Mr. Ruhl sold 3 appliances in November for $159.75.

McIlvaine Training School in New Quarters

McIlvaine Burner Corporation of 749 Custer avenue, Evanston, Ill., has just moved its dealer training school into a new building across the street from its factory. The school is equipped with a boiler and furnace for giving instruction on typical installations, and with a small fire pot boiler for instruction on difficult installations. The course is given every Tuesday, Wednesday and

Thursday, and it covers the assembly of burner, installation, regulation and adjustment.

In the picture of the training school, reading from left to right are: Wm. F. Fischer, Adrian, Mich.; Clarence Vriesenga, Heth Oil Heating Co., Grand Rapids, Mich.; R. A. Eiler, representative of Charles Miller, Crown Point, Ind.; Leon S. Heth, president of Heth Oil Heating Co., Grand Rapids, Mich.; E. H. Hauslein, instructor in installation, and R. O. Blankmeyer of Correct Combustion Engineering Co., Toledo, Ohio.

Selling Ideas—

(Continued from Page 44)

that might be on his lips as he talks to the fastidious housewife. Fittings that match the most modern of decorative schemes—fittings that would put "snap" into fixtures of the more conservative style of earlier years. Style is a strong appeal where the feminine buyer is concerned.

Then there is a big book on pottery where, once more, "styling" is uppermost. On brass goods there is a notice which talks about faucets that are "dependable, attractive, economical, for every purpose," which seems to be a rather complete summary about what could be said of any faucet. "The fact that they are renewable under water pressure gives the contractor something to talk about," remarked the chief executive of the company making the line. A letter from an architect, from which our contractor-dealer might quote, would round out his sales talk nicely, on the theory that a satisfied customer who is willing to talk about a product is really the best kind of sales help.

Slipping over into heating, here are three sales helps

covering regulators, water feeders and a circulator. The last-named product, it is said, "Will save fuel on even the best of installations," "Will give a more uniform heat on any job." Six facts are enumerated to give the contractor-dealer an easy adding-up of what he can say about such a product.

In another issue, in which we continued the "Ten Best Prospects" method of selling, the range of announcements ran from fittings and gas furnaces to a description of what was called "matched beauty in the bathroom." This latter piece of literature goes back to the idea mentioned above—giving to the bathroom the quality of style through a study of the fixtures and fittings which, when combined, will give the impression that they belong together. This company's sales force is stressing the point that "it is now possible to combine beauty with style and distinction in bathrooms—at a moderate cost." Once again the thinking of sales experts comes back to style and distinction as strong selling points.

It is obvious that, in an article of this kind, we can touch only the high spots. But it should also be obvious that there is, in the advertising issued by manufacturers describing their products, an accumulation of sales ideas that is of inestimable value to the contractor-dealer. Here is what the men who are making these products which he sells have to say about them. It is natural that the reasons they advance for the purchase of such products represent their considered ideas. They embody what the production man, the sales man and the advertising man think to be the very best presentation of the reasons why such products will serve a valuable purpose with the customer.

USING A SALES IDEA

Such ideas may and should be adapted by the contractor-dealer to his own selling efforts. And not only will he find these sales ideas of use to him in promoting a particular product. He will find that, as he becomes more and more familiar with the type of sales thinking that goes into the production of this advertising, there is a general selling viewpoint, always timely, which he can adopt in his own selling efforts. Just now the emphasis in selling is on new and improved products, at new low costs. Presently, as business picks up and prices become firmer, you will find the quality argument coming to the fore. The contractor who is keeping in touch with these sales developments will know when to shift the emphasis in his own selling from low prices to quality; because that will be the argument the customer will be hearing from all other quarters, and the man who continues to talk about prices will find himself out of step. The contractor should see to it that he gets this kind of information from the salesmen calling on him.

Regard these sales helps, then, as a source of information as to products themselves, and equally as a source of selling ideas to assist you in putting over the products where they are needed and, in general, in toning up your whole selling effort and keeping it in step with the times. A piece of trade advertising is worthy of study from both standpoints. And it is certain that such study from the sales viewpoint is going to be of increasing importance as business gets under way in the recovery from present levels.

You don't need to figure on breakage when you use

ALL STEEL
TRIMO

The Trimo pipe wrench with its all steel construction and improved heat treating for toughness is as nearly unbreakable as any pipe wrench ever made.

That certainty of long life makes Trimo one part of your equipment that can be figured on in advance. When you're figuring close, play safe by standardizing on this dependable wrench.

ALL STEEL TRIMO PIPE WRENCH

Handle drop forged.

Made by
TRIMONT MFG. CO., INC.
Roxbury [Boston], Mass., U. S. A.

MARKETS

BUSINESS REPORTS FROM LARGE JOBBING CENTERS

REPORTS received during December from the leading jobbing centers failed to show any change of consequence in conditions surrounding the plumbing and heating materials' market.

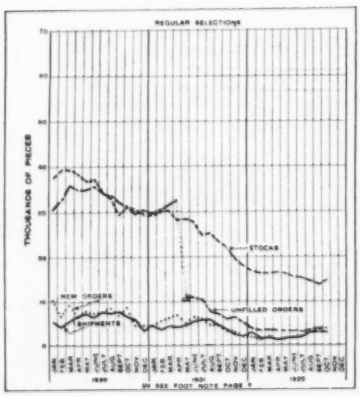
With the beginning of the new year one of the leading manufacturers of plumbing fixtures announced a reduction of 10 per cent in the price to wholesalers on all staple items in the lines of pottery and enameled ware. It is understood that this reduction was made in an effort to stimulate sales for reconstruction work and for new construction.

Greatest activity in building in the latter part of October and in November, according F. W. Dodge Corporation's statistics covering 37 States, occurred in the Middle Atlantic States, excluding New York, and metropolitan New York and vicinity. Contracts in both these territories amounted to more than $15,000,000. The Pittsburgh and Kansas City districts, with lettings totaling $12,900,000 and $11,200,000, respectively, were next in importance. The measurable footage of all contracts reported for the month was at the lowest point in many years. A year ago the figure was over two and a half times as large. The value of all awards dropped 16 per cent from the previous month and with the exception of the totals for January and February, was the smallest for the year.

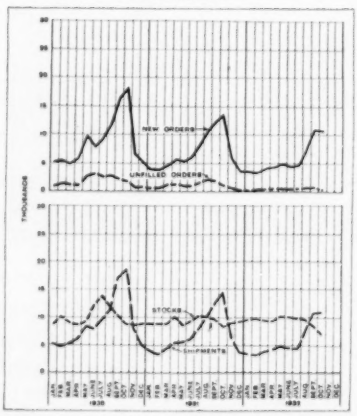
The declines in residential building were fractional, with both footage and value still slightly above the lows reported for July. Although the value of public works and utility contracts was off 15 per cent from September, it was still 19 per cent above the monthly average value for the first 10 months of 1932.

The charts on this page are taken from government reports and portray statistically the recent record of six commodities, important in the plumbing and heating field.

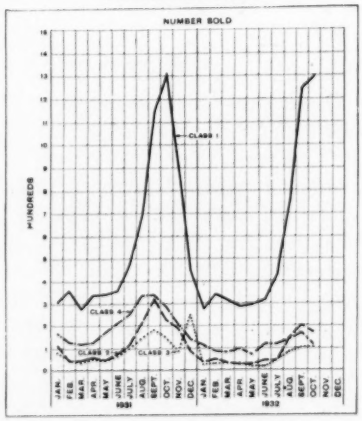
Porcelain Plumbing Fixtures



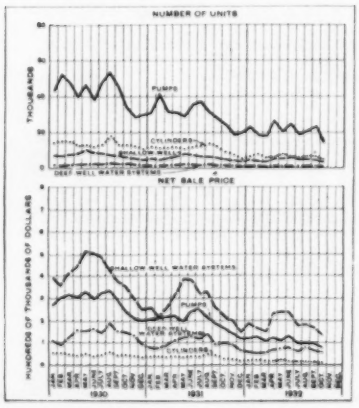
Oil Burners



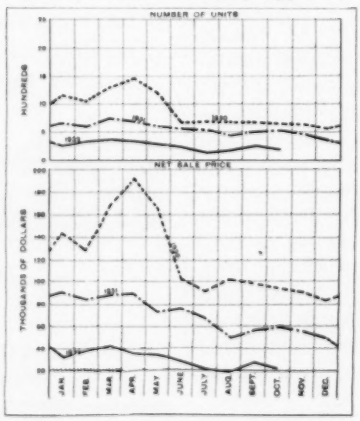
Mechanical Stokers



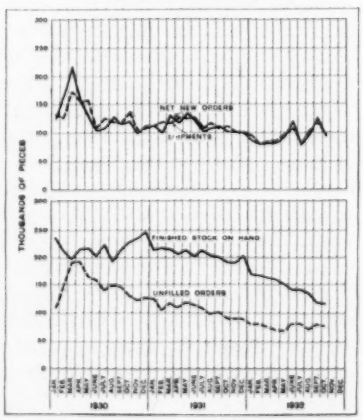
Domestic Pumps and Water Systems



Domestic Water Softening Apparatus



Plumbers' Woodwork



Thawing Pipes—

(Continued from Page 35)

This is one of the few cases where electricity was called upon to do all of the thawing. Usually a layer next to the pipe is thawed and running water does the rest. The power should not be disconnected when water first begins to flow, however, as the shifting of ice plugs in the pipe may jam in an elbow or an uneven place in the pipe, and the frozen dirt around the pipe cause the pipe to freeze again. Power should be left connected, if not turned on, until there is a fairly full flow.

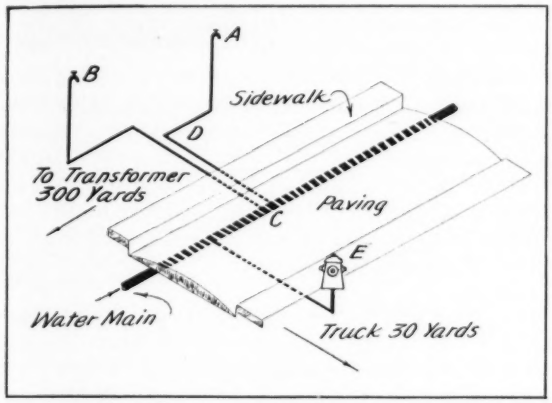


Fig. 1—This shows the piping involved in an interesting case. The supply for both houses was frozen

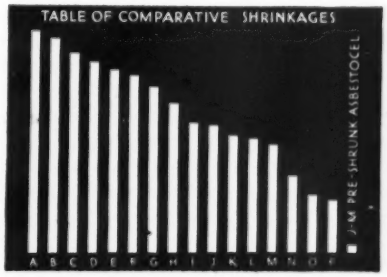
Serious difficulty had been experienced in getting the electricity to flow in the case above cited, until the curb-cock casing and valve rod had been tapped with a hammer. This must have broken a thin film of ice that had formed around the loose fittings at the valve below. Tight joints and connections are vital if a full flow of current is to result, in fact the contact resistances form a major portion of the resistances of the electrical circuit.

In a Montana case, it was found impossible to get any appreciable current to flow at all; then it occurred to some-one that a stretch of wooden stave pipe had been used in that part of town. In another case in the same town a piece of lead pipe was melted before the ice was thawed. (Lead pipe must be thawed more slowly than iron pipe, therefore.) A large portion of the thawing in this and other Montana towns is done electrically, and the method is taken for granted as is any other standard service.

The Alert Heating and Ventilating Co. of Springfield, Ohio, has the contract for the installation of the heating and ventilating equipment in the Physical Education Building of Springfield High School and the Nolte Brass Co. building. This concern has just completed the plumbing, heating and ventilating contracts on the Junior high school in Springfield.

Pre-Shrunk Asbestocel *eliminates shrinkage gaps . . .*

RECENT LABORATORY TESTS on 16 leading pipe coverings proved that they have an average shrinkage 21 TIMES GREATER than Johns-Manville Pre-Shrunk Asbestocel.



WITH Johns-Manville Pre-Shrunk Asbestocel you can apply a pipe covering job and know definitely that it will stay put year after year, without unsightly shrinkage gaps to spoil its looks. Here's an end to profitless repair calls—complaints about faulty workmanship.

Ordinary cellular pipe coverings shrink because they are made of asbestos paper which *absorbs* moisture. When heat is turned on, this covering dries out . . . sections shrink, pull apart at the joints . . .

But Pre-Shrunk Asbestocel is made of *waterproof* paper. It cannot absorb moisture—the *cause* of shrinkage is removed, it can't shrink.

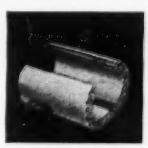
In Canvas Finish—and in New Non-Canvas Type that Saves ⅓ Labor

By ending ALL objectionable shrinkage J-M Pre-Shrunk Asbestocel has at last made the Non-Canvas Cover practical.

This type of Pre-Shrunk Covering requires no pasting, slips easily over the pipe like an open book—clinches on tight with simple, quick-fastening staples. It's a high-speed covering that can be applied in one-third less time than canvas type, even by appliers who have never handled it before.

Pre-Shrunk Asbestocel, both in the regulation Canvas Cover and in Non-Canvas Finish, is stocked by all better plumbing supply houses. Get the full particulars from your supply houses or write to Johns-Manville, 292 Madison Ave., New York.

Regular Canvas-Covered Pre-Shrunk Asbestocel. The standard finish for many years provides all the advantages of the old-style Johns-Manville Improved Asbestocel, *plus* the new exclusive Pre-Shrunk feature, yet it costs no more.



Asbestos-Covered High-Speed Pre-Shrunk. Covered with asbestos paper, it needs no pasting—saves ⅓ application time. Costs no more than regular Canvas-Covered Pre-Shrunk. Also available in Aluminum Finish at only slightly higher cost.

Johns-Manville

Pre-Shrunk

ASBESTOCEL

TRADE

NEWS OF PLUMBING AND HEATING CONTRACTORS

Plans for New Orleans Convention

By E. B. Kleine, President
National Association of Master Plumbers

Our fifty-first annual convention of the National Association of Master Plumbers will be held in New Orleans June 20, 21, and 22. The exposition of plumbing and heating products will be held on June 19, 20, 21 and 22. Both the convention and the exposition will be in the New Orleans Municipal Auditorium.

Louis J. Petrie of New Orleans is chairman of the Convention and Exhibit Committee and is being assisted by Nat S. Finney, who is acting as Exposition Bureau Manager. The Exposition Bureau has opened offices at 624 Gravier Street, New Orleans.

The New Orleans Municipal Auditorium is an ideal location for our convention and exposition. It is a comparatively new building, thoroughly modern, and offers unrivalled facilities for a large gathering and for an exposition.

The auditorium is only a few minutes walk from the Roosevelt Hotel which has been selected as the official convention headquarters.

The Board of Directors of the National Association of Master Plumbers at its recent meeting in New Orleans decided to make the modernizing of plumbing and heating equipment the dominant theme of the exposition.

It is the intention to make this convention the instrument through which a stronger interest in up-to-date plumbing and heating will be developed in the New Orleans market and throughout the southern market as a whole.

Many changes have taken place in the plumbing industry since New Orleans last entertained the members of the National Association of Master Plumbers. This was in 1921 when the 39th annual convention was held in the "Crescent City."

While the exposition will be of definite dollars and cents value to the exhibitor, the program for the convention will stress the educational and inspirational features which are such an important part of our annual gathering.

Many of our members will wish to take advantage of this opportunity to see one of the most distinctive cities of the United States. Because of its Old World atmosphere, New Orleans is host yearly to thousands of tourists.

It is said that New Orleans combines the glory of a romantic past, the challenge of an ever-busy present, and the promise of a brilliant future.

We are looking forward to a most interesting convention in New Orleans. It will be profitable for you to attend. I wish to take this opportunity to urge all members to make their plans now to visit New Orleans next June.

Pennsylvania Master Plumbers to Hold Mid-Winter Meeting

The Pennsylvania State Association of Master Plumbers will hold its mid-winter meeting at the Abraham Lincoln Hotel in Reading, Pa., on Wednesday, January 25, 1933. As in former years, the meeting will consist of two sessions, one at 10 o'clock in the morning and the other at 2 o'clock in the afternoon. Lunch will be served between one and two o'clock. All indications point to a large attendance, according to Secretary-Treasurer Carl J. Forve of Wilkes-Barre, Pa.

Some of the delegates and guests attending the recent annual convention of the California State Association of Master Plumbers, held at Oakland, Calif.

Philadelphia Master Plumbers Nominate Officers for Next Year

The December meeting of the Philadelphia Master Plumbers' Association was called to order by President M. J. Feeney, who proceeded with the usual order of business, after which he read his report as president from the time he took office up to this meeting. He gave a clear account of the activities of the association, and ended by stating that his health would not permit him to remain in office for another term. Several letters were thereupon read from prominent men, both in and outside of the plumbing industry, congratulating him upon the excellent record he has made during his term of office.

The annual election will be held at the January meeting, and the following nominations were made:

President, George Hicks; secretary, Robert Pflug-Felder; sergeant-at-arms, Elwood Mackay; treasurer, George H. Moeller.

Nominations for vice presidents: William Boal, Walter Raid, Harry Stilwell, Edward Quaid, Albert Yung, Howard Neilson, Anton Jacoby, William Beahm, William H. Frey.

Nominations for board of directors: M. J. Feeney, Philip Hering, John Naegle, Charles Rapp, L. J. Craig, Edward Gannon, Edward Rinear, George F. Uber, James Soehle, Charles Jahn, Conrad Eisman, H. MacElwee, M. J. Moran, A. L. Stoltz.

Milwaukee Plumbers to Attend Course at State University

Several members of the Milwaukee Master Plumbers' Association are expected to take advantage of the short course in plumbing to be given at the University of Wisconsin, Madison, Wis., from February 6 to 11, 1933. A course is also scheduled for sewage plant operators from January 9-14. This latter course has a special appeal to plumbers in the smaller towns and early registrations indicate widespread interest throughout the state.

The courses will include lectures and demonstrations, as well as actual laboratory work.

California Plumbing Inspectors' Third Annual Convention

Adoption of a preliminary plumbing code for the guidance of California cities and the election of officers and directors constituted the main business of the third annual convention of the Plumbing Inspectors Association of California, which was held recently at the El Tejon Hotel, Bakersfield.

The code, in draft since the formation of the association, was approved in final preliminary form for submission to attorneys for a check of its legal phases.

The election resulted in the re-naming of Gay R. Hilliker of Fresno as president, and the naming of the following as directors: Northern California district: E. A. Court, Sacramento; G. W. Genuit, Stockton; George Grimshaw, Berkeley; L. M. Hendsch, Bakersfield.—Southern California district: J. B. Davis, Pasadena; J. M. Winkler, Pomona; Joseph T. Curley, Long Beach; J. Ben Montgomery, Whittier; W. R. Bills, Alhambra.

President Hilliker appointed committee members as follows: Press: L. M. Hendsch, Bakersfield; Stephen I. Smoot, Los Angeles.—Auditing: Charles M. Bailey, Los Angeles; G. W. Genuit, Stockton; Thomas Steel, Sacramento.—Resolutions: J. B. Davis, Pasadena; Joseph T. Curley, Long Beach; J. M. Winkler, Pomona.—Nominating: Fred N. Johnson, San Jose; J. B. Davis, Pasadena; Charles Bailey, Los Angeles.

Speakers on the two-day convention program included H. W. Geyer of the engineering staff of the Southern Counties Gas Company, who emphasized the necessity of rigid inspection of gas installations, and William Schultheis, of the Public Service Brass Company of Los Angeles, who discussed the manufacture and installation of flush valves.

Decision was made to hold the 1933 convention of the Plumbing Inspectors Association of California at Long Beach on October 6 and 7.

Northern California Federation Will Meet January 21

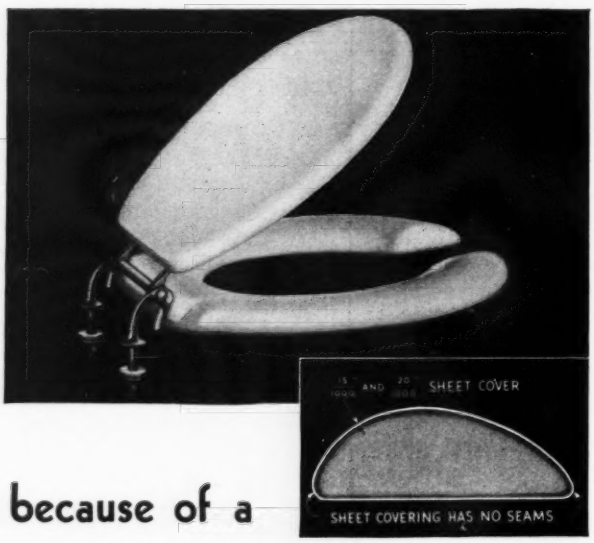
Facing the new year with prospects of continued accomplishment through organized interbranch activity, the board of directors of the Northern California Federation of Plumbing and Heating Industries met at a dinner gathering at the Elks Club in San Francisco on Thursday evening, December 1st, to lay plans for the next Federation conference. It was decided to hold the next conference in San Francisco on the afternoon and evening of January 21, although the plans do not yet include the selection of the hotel. J. V. Young, past president of the California State M. P. A., and Alex. Coleman, past secretary of the National association, both of San Francisco, are working with other leaders on the program to be followed, which will probably include a discussion relating to resale pricing by manufacturers, as well as a comprehensive, practical talk along educational lines. Aside from the business sessions, the conference will be enlivened by a banquet and a card party for the ladies, followed by dancing.

Among those present at the board meeting were Harry G. Newman of Oakland, president; J. V. Young, secretary; Alex. Coleman, past president; and directors: Robt. Duncan, Jr., of Oakland, P. E. Brand of Redwood City, and Chas. A. Merritt of San Jose. Jas. I. McIlreevy, F. F. Elliott, Peter P. Schubert and Francis J. Baker, all of San Francisco, were present as guests. Vice President Jas. F. Mauzy of Walnut Creek was absent on account of illness.

Opens Quantity Survey Office

Henry A. Gherardi, formerly in charge of the Contracting Plumbers Quantity Survey Bureau, which was recently dissolved, has opened an office at 1637 Graybar Building, 420 Lexington Avenue, New York, where he will conduct a quantity survey business for master plumbers.

More Profit for You



because of a

Greater Value from Us

Today, the public expects more for its dollar than ever before—not only a lower price but also an improved product. You cannot change this condition but you can use it to your profit.

The Bonalite Seat completely satisfies the requirements of the 1933 purchaser: it has new and exclusive features—it has a lower price. It is emphatically not "just another sheet covered seat."

The sheet covering on the Bonalite Seat is *seamless;* it results from a patented process that forms the sheet and applies it to the core at the same time. The greater thickness of the sheet covering is another important advantage (see cross section above) of the Bonalite Seat.

The patented core construction is unusually strong and moisture proof. The heavy brass hinge is chromium plated and highly polished. Every Bonalite Seat is guaranteed.

Plumbing contractors, jobbers and architects who have examined the Bonalite Seats are unanimous in the opinion that they are the greatest value ever offered in a sheet covered seat—or any kind of a seat!

Ask your jobber about Bonalite Seats. Then write us for a cross section of the seat ring so that you can prove to yourself that Bonalite Seats are a better value and easier to sell.

AMERICAN RUBBER PRODUCTS CO.
8561 Butler Ave. Detroit, Mich.

BONALITE SEATS

"The only Seamless sheet covered seat"

F. J. Timmermann Is Host at Venison Dinner

Fred J. Timmermann, one of the directors of the Contracting Plumbers' Association, Inc., of St. Louis, Mo., was the successful hunter of a 274-pound buck a few weeks ago, and as a result of this he recently gave a venison dinner at the Carsonville Wine Gardens in St. Louis. The dinner turned out to be an exceptionally enjoyable affair, which will not soon be forgotten by those who were fortunate enough to be in attendance.

Among those present were: Charles Burgess, president of the St. Louis Association; Roger E. Jarvis, Henry Bartosch, D. C. Cunningham, D. E. Hannegan, Wm. Hunt and Sam Burman, members of the board of directors of the St. Louis Association; Edw. Quinn, John F. Corrigan, Jno. D. Els and J. H. Weiler, chairmen of the various standing committees of the St. Louis Association; Henry Menne, treasurer-elect of the city of St. Louis; Philip Deuser, sheriff-elect of St. Louis county; Otto Frank, constable-elect of St. Louis county; Judge Fred E. Mueller, circuit court, St. Louis county; Judge A. H. Werremeyer, central township, St. Louis county; Judge Walter Stolhuth, probate, St. Louis county; Oscar Jacobsmeyer, clerk of warrant court, St. Louis county; Willis Benson, county collector, and Roy Jablonsky, county surveyor.

Officers for Local Associations

NEWTON, MASS.—Master Plumbers' Association of Newton and Vicinity, Inc.: President, Charles D. Kieser, Newton Highlands; vice president, John J. Burke, Newton Centre; secretary, Leonard J. Hickman, Newtonville; treasurer, John T. Ryan, Waltham.

MILWAUKEE, WIS.—Milwaukee Master Plumbers' Association, Inc.: President, Henry C. Weber; vice president, A. A. Hoffmann; Secretary, Edward F. Trebs; treasurer, Walter Tesch; assistant secretary, Peter J. King, 774 North Broadway, Milwaukee, Wis.

NEW YORK, N. Y.—The Association of Master Plumbers of Bronx Branch: President, S. G. Arnone; vice president, Frank R. Roth; secretary, Philip Farbman, 1 East Tremont avenue, The Bronx, New York City; treasurer, Alfred Beyrodt.

ORANGE, N. J.—Orange and Maplewood Master Plumbers' Association: President, Adolph Trapper; vice president, Raymond Bocco; secretary, Willard N. Durr, 72 Midland avenue, East Orange; treasurer, Frederick Boggart.

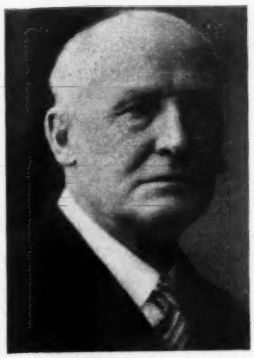
REGINA, SASKATCHEWAN, CANADA.—Regina Master Plumbers' Association: President, J. Smith; vice president, N. B. Rountree; secretary, F. Lawrence, 1746 Cornwall street, Regina.

ST. LOUIS, MO.—Contracting Plumbers' Association, Inc.: President, Charles Burgess; vice president, Roger E. Jarvis; secretary, D. C. Cunningham; treasurer, Henry Bartosch; board of directors: F. J. Timmermann, Edward Monteath, Robert Hunt, Sam Burman and Bernard Braun.

EVANSTON, ILL.—North Shore Plumbing and Heating Contractors' Association: President, Harold Gregg, Evanston; vice president, Sam Steffens, Winnetka; secretary, A. J. Butow, Evanston; treasurer, George S. Moore, Evanston.

Obituaries—

David Craig, Past National President



David Craig

David Craig, past president of the National Association of Master Plumbers, died at his home, 201 Andover street, Peabody, Mass., on Friday, December 9, after a short illness in his 70th year, having been born at St. Johns, N. B., Canada, in 1863. He was a past president of the Massachusetts State Association of Master Plumbers and of the National Association of Master Plumbers, having served the latter organization as president during the year 1904-1905. His plumbing office has for many years been located at 70 Broad street, Boston, Mass., and he took an active interest in the plumbing industry and in association affairs until the time of his death.

In 1915, Governor Walsh of Massachusetts appointed Mr. Craig as a member of the State Board of Plumbing Examiners and he was reappointed by Governor Calvin Coolidge and Governor Cox. He was also president of the city council in Peabody, Mass., and a member of the Jordan lodge of Masons of Peabody.

His widow, two daughters and one son survive him.

August Kehm

August Kehm, president and one of the founders of the Kehm Bros. Co., heating, ventilating and power plant contractors in Chicago, died at his home in that city on Sunday, December 11, in his 64th year. Mr. Kehm was a charter member and a past president of the Chicago Master Steam Fitters' Association, member of the American Society of Heating and Ventilating Engineers and served on its board of governors from 1908 to 1911. He was also treasurer of the Illinois Chapter twenty-four years, and a member of the American Society of Mechanical Engineers, the Chicago Engineers' Club, the Hamilton, the Lake Shore Club and the South Shore Country Club. He is survived by his widow and a son, Horace S. Kehm. Mr. Kehm had a large circle of friends who will regret to receive the news of his death.

Wm. H. Mitchell

Wm. H. Mitchell, master plumber of Baltimore, Md., died November 27, 1932. He was suddenly taken ill upon his return from a hunting trip and developed pneumonia.

Mr. Mitchell retired from the plumbing business on November 1, 1932, and expected to spend his time at his country home. He had been engaged in the plumbing business since 1894, and was from 1904 to 1907 chief plumbing inspector of Baltimore. He always took a keen interest in local and national association work.

CAPITOL

Make Repairs NOW! Capitol Sells

Basin Cocks

Combination Sink Faucets

Stop and Wastes

Bath Cocks

Globe Valves

Radiator Valves

Boiler Trimmings.

In Fact An

Unusually

High Grade

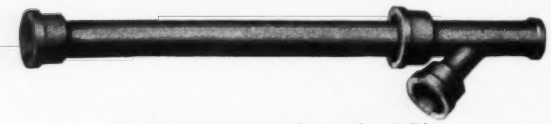
Complete Line.

Fair Prices.

Order at once and save yourself some real money

Bohn Aluminum & Brass Corporation
CAPITOL BRASS DIVISION
MANUFACTURERS OF BRASS VALVES, BOILER TRIMMINGS AND PLUMBERS' BRASS GOODS
DETROIT-MICHIGAN

Duriron Combination Drain and Trap



Duriron Bell and Spigot Jointed Pipe

Do You Know that acids diluted with water when wasted in a drain are in many cases more corrosive than at full strength? A small amount of acid can eat away an ordinary drain pipe in a comparatively short time.

Duriron is a solid cast metal, equally resistant to attack inside, outside and all the way through. It does not depend upon lining, coating or painting and it has the necessary structural strength for a good installation.

Duriron Drain-Pipe and Floor Drains should always be used for all types of structures, where acids are handled or drained to waste. This applies both to new construction and remodeling.

Quick Shipments from Stocks

THE DURIRON CO., INC.
410 N. Findlay St. Dayton, Ohio

DURIRON ACID PROOF DRAIN-PIPE

Panel Heating—

(Continued from Page 47)

watt-hour per cubic foot of heated space per heating season.

Power has been applied in the panels of our experimental room at a density of from 5 to 15 watts per sq. ft. It is quite likely that the maximum requirement should not be more than 25 watts per sq. ft. of heated panel in 0 deg. Fahr. weather for the best temperature distribution. The temperature rise with such a power application would depend upon the position of the panel, the insulation both of the outside walls of the house and immediately behind the heated panel, and the per cent of total inside surface area heated. In our experimental work the maximum surface temperature was 119 deg. Fahr.

National Officers Greeted by Large Turnout at Detroit Meeting

That the Master Plumbers of Detroit and vicinity are deeply interested in all that pertains to their industry is proven by the attendance of some 400 at the meeting sponsored by the National Association at the Fort Wayne Hotel, Detroit, Thursday, December 8. In addition to Master Plumbers from the metropolitan area, Jackson, Kalamazoo, Muskegon, Lansing, Grand Rapids, Holland, Flint, Port Huron, Saginaw, Bay City and Pontiac were well represented.

The meeting was called to order in the spacious ballroom of the Fort Wayne Hotel by Harry Sprenkle, president of the Plumbing and Heating Merchants of Detroit. Mr. Sprenkle introduced H. E. Ysberg, president of the Michigan State Association, who in turn introduced Edward Frank of Cincinnati, secretary of the National Association of Master Plumbers, who presided.

As the first speaker, Mr. Frank introduced National President Edward B. Kleine. During the course of a splendid address Mr. Kleine reminded his audience that the National Association was organized over 50 years ago and has originated and sponsored all laws affecting the manufacture, distribution and installation of plumbing materials which safeguard the health of the public.

The next speaker, Past National President John J. Vogelpohl of Cincinnati, in his address, called attention to the glaring discrepancies between the Fair Trade Practice rules adopted in 1925 and the present new policy, citing particularly the rule which condemns selling below cost.

Secretary Frank introduced as the next speaker, Joseph G. Hildebrand, formerly secretary-manager of the Plumbing and Heating Industries Bureau and recently appointed executive secretary of the National Association of Master Plumbers.

As the next speaker Secretary Frank very cleverly introduced himself and during the course of his remarks pointed out the unceasing efforts of the National Association in behalf of the Master Plumber.

Following the adjournment of the meeting Field Secretary Stuart was very busy receiving applications for membership from many of the non-members who were present.

Plan Big Illinois Convention at Chicago

Recognizing the serious problems confronting the plumbing industry as a result of the changed business conditions of the past several years, and the need for teamwork in their solution, the Illinois Master Plumbers Association has arranged a constructive program for its 40th annual convention, to be held January 17-18-19, at the Congress Hotel, Chicago.

This will be the first time in 25 years that the state convention has been held in Chicago and expectations are for the largest attendance in recent years.

Manufacturers and wholesalers of Chicago and the state, as well as manufacturers who maintain branches in Chicago are co-operating in the plans to insure a large attendance as well as participating in the program itself.

One of the outstanding features of the program will be an address by W. E. Price, of the Knapp Supply Co., of Muncie, Ind., on the possibilities of modernization work. Mr. Price is a speaker of outstanding ability and is an authority, by experience, on the subject on which he will talk.

S. F. Jeffries, secretary of the National Brass Association and former secretary of the Chicago and Illinois Credit Bureaus, will address the convention on the subject of "Credits," while William J. Spillane, of James B. Clow & Sons, past president of the Central Supply Association, will speak on "The Need for Closer Cooperation Between the Wholesaler and the Contractor."

R. V. Sawhill, editor of DOMESTIC ENGINEERING, and Joel I. Connolly, chief of the bureau of public health engineering of the city of Chicago, also will be featured speakers of the convention.

In arranging the program, the committee decided to confine its list of speakers to recognized authorities and leaders of the plumbing industry, believing the problems of the industry can best be solved from within the ranks.

A feature of the convention will be the holding of but one business session daily. The meetings will be called to order promptly at 10 o'clock each morning and the program carried through to adjournment at 2 p. m.

A pre-view of the "Century of Progress Exposition" will be one of the highlights of the convention entertainment, arrangements having been completed by a committee headed by Thomas F. Hanley, Jr., for a sight-seeing trip through the exposition grounds on Wednesday afternoon.

The annual dinner dance will be held Wednesday night in the gold room of the Congress Hotel. William Redieske is chairman of the committee.

On Tuesday afternoon a general invitation has been issued by Chicago manufacturers and wholesalers for delegates and visitors to the convention to visit their offices and showrooms.

The women of Chicago local auxiliaries have arranged for a luncheon and bridge party for Tuesday afternoon for the women attending the convention.

Henry P. Reger, of H. P. Reger & Co., Chicago, is president of the association and will preside over the convention. William J. Lang is chairman of the general convention committee.

This VALVE *gives maximum service at minimum cost*

"Take it from me—you sure can count on a Jenkins Disc."

Jenkins
BRONZE IRON STEEL
VALVES
Since 1864

Not a single opportunity has been missed to make the Fig. 106-A Jenkins a time and money saving valve. Consider the disc, for example. It is a genuine Jenkins Disc, of a special resilient composition, made by Jenkins Bros. It assures long wear and leak-tight closing. Fig. 106-A is regularly fitted with Jenkins No. 119 Red Disc, but Jenkins Discs for other services can be supplied when so ordered.

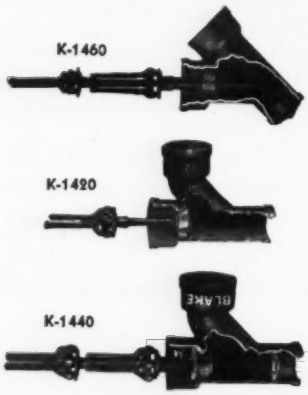
Made in globe, angle, cross and check patterns.

JENKINS BROS.

80 White St., New York, N. Y.; 510 Main St., Bridgeport, Conn.; 524 Atlantic Avenue, Boston, Mass.; 133 No. Seventh St., Philadelphia, Pa.; 646 Washington Blvd., Chicago, Ill.

JENKINS VALVES ARE ALWAYS MARKED WITH THE "DIAMOND"

SAVE TIME *with* BLAKE *patented* Lightning Test Plugs



This greatly improved test plug is easily inserted and adjusted. All inconveniences eliminated. Do not confuse with ordinary test plugs. Thousands in use with a continuous demand for more. All sizes from 2 to 6 inches. Order by number, stating size required. Sold by jobbers everywhere.

"MAKE NO MISTAKE—USE THE TESTED BLAKE"

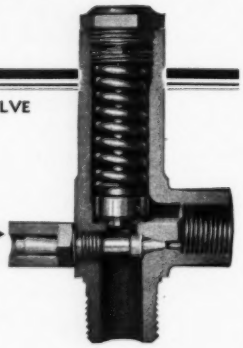
BLAKE SPECIALTY COMPANY
ROCK ISLAND « ILLINOIS

MOORE RELIEF VALVES
Mean More Safety

PRESSURE—TEMPERATURE VALVE

Extra Fuse on the Job.

Fuse carrier holding extra fuse plug. Replacement made quickly without removing valve or disturbing pressure setting.



PROTECT

Your Boiler Installations with Moore Valves

THEY ARE ACCURATE IN OPERATION—EASILY INSTALLED QUICKLY SERVICED

ASK YOUR JOBBER FOR THEM

Standard and Special Valve Equipment

J. W. MOORE VALVE CORPORATION
EVERETT, MASS.

Utility Co-operation—

(Continued from Page 49)

to recognize proper retail cash prices and the need that, on sales which are financed, the utility and the cooperating contractor be able to offer the same terms.

As an executive of one of these utilities says: "A few gas companies in the United States have helped to make known their aims and policies to promote a better understanding with the plumber." In the case of his own company, he feels that "definite assurance should be given of the company's willingness to cooperate."

Chicago Plumbing Contractors' Annual Meeting and Dinner

On Thursday evening, January 5, the Plumbing Contractors' Association of Chicago held its annual meeting and dinner in the Louis XVI Room of the Congress Hotel.

President Henry Swade was in the chair.

The activities of the association during the past year were reviewed in the reports of the retiring officers and the chairmen of the various standing committees.

The nominating committee appointed at the December 2nd meeting, presented the following list of nominees who were duly elected for the coming year: President, Chas. E. Gawne; vice president, Thos. F. Hanley, Jr.; treasurer, Henry P. Reger, and directors, John A. Corboy, Henry O'Callaghan, Marcus Weil, Andrew Nilson, Michael Mele, John J. Calnan, Henry Swade, and A. J. F. Lowe, and secretary, Peter M. Munn (appointed).

The arrangement committee provided suitable entertainment following the close of the business session.

CONVENTION DATES

January 17, 18 and 19, 1933—ILLINOIS—The annual convention of Illinois Master Plumbers' Association, in Chicago, with headquarters at the Congress Hotel.

January 23, 24 and 25, 1933.—A. S. H. V. E.—The thirty-ninth annual meeting of the American Society of Heating and Ventilating Engineers ,at Cincinnati, Ohio, with headquarters at the Hotel Gibson.

January 25 and 26, 1933.—WISCONSIN.—The annual convention of the Wisconsin Master Plumbers' Association, at Milwaukee, Wis., with headquarters at the Pfister Hotel.

February 7 and 8, 1933.—OHIO—The 42nd annual convention of the Ohio State Association of Master Plumbers, at Akron, Ohio, with headquarters at the Netherland Hotel.

April 17 and 18, 1933.—MISSOURI.—The annual convention of the Missouri State Association of Master Plumbers, name of convention city to be announced later.

May 22, 23, 24 and 25, 1933—CALIFORNIA—The annual convention of the State Association of Master Plumbers of California, at Los Angeles, Calif., with headquarters at Alexandria Hotel.

June 12, 13, 14, 15 and 16, 1933—A. O. B. A.—The 10th annual convention and national oil burner show of the American Oil Burner Association, Inc., at the Hotel Stevens, Chicago, Ill.

June 19, 20, 21 and 22, 1933.—N. A. M. P.—The 51st annual convention and exposition of the National Association of Master Plumbers, at New Orleans, La.

June 25 to 30, 1933—M. E. & P. E.—The Sixth Midwest Engineering & Power Exposition, at Coliseum, Chicago.

July 25-28, 1933—H. P. C. N. A.—The 44th annual convention of the Heating and Piping Contractors National Association, at Chicago, Ill., with headquarters at the Hotel Sherman.

Enamelware—

(Continued from Page 41)

To examine enamelware for imperfections, cut a round hole 3 in. in diameter in a piece of paper or cardboard. This is known as an inspection window and should be arranged so that it can be conveniently laid on an enameled iron ware surface to determine the number of blemishes that may be grouped in an inspection window. As for the method of inspecting enameled iron ware, examine the fixture about 2 feet from the area being examined. Diffused light or artificial light shaded from the eyes should be used. Move the piece, or the light, so as to illuminate the surface from all angles. No actual count or measure of blemishes should be attempted except in case of doubt, since with practice dimensional limits and numbers can readily be gauged by the eye.

TABLE 1

Location on Surface	Description	Size or Appearance	MAXIMUM ALLOWABLE Number Allowed Per "Window"	Number Visible from one Normal Standing Position	Total Number Per Fixture
Entire Enameled Surface	†Specks	Small	8	Not to be counted	
		Medium	4	8	12
	Dimples Lumps	Small	2	6	8
	Specks Lumps Dimples	Large	1	3	5
	Waviness	Distinct Areas totalling not over 10 sq. inches	1	1	2
Visible Surface From Normal Standing Position	Pinholes		1	2	3
	Blisters	Small and well covered	2	4	6
Edges in Contact With Wall	Warpage		1/32" per foot maximum		
All other edges	Warpage		1/16" per foot maximum		

†See Table 2.

The following table gives approximate size of specks:

TABLE 2

Speck	Distance in feet at which visible from normal standing position	Approx. Size (inches) Maximum Dimension
Small	Up to 2	1/100 to 1/32
Medium	Up to 4	1/32 to 1/16
Large	Over 4	1/16 to 1/8

Definitions are contained in the following:

Dimple—A slight depression in enameled surface.

Blister—A raised portion of enameled surface not more than 1/8 in. to 3/16 in. in diameter. Caused by gas bubble.

WESTCO

Makes Money for its DEALERS

—it can do the same for you

WESTCO JUNIOR No. 25 250 to 350 g.p.h. $80 f. o. b. Factory *Slightly Higher on Pacific Coast*

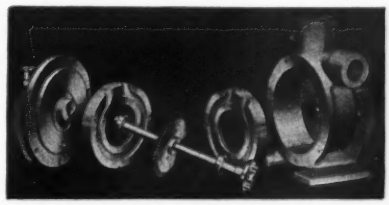
NO short discounts—exclusive territories—no costly service trips are the reasons why dealers find it easier to make money with the Westco line.

Unrivaled performance—money-back guarantee—trouble-free operation and extra features are reasons why people are now buying Westcos.

Patented Removable Liners allow the capacity to be increased or decreased without disturbing the installation. They also protect pump casings from wear—*thus insuring lifetime service for casings.*

All Westcos have Automatic Air Volume Controls; are Self-priming and quiet in operation. No "water-hammer" or pounding in pipes. Good for 28 ft. suction lift. Lubricate annually. Durable black and green finish.

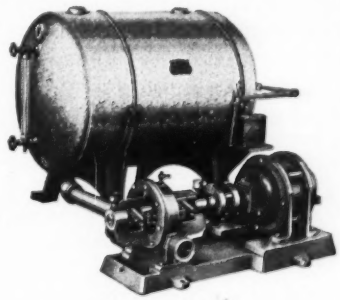
Complete range of sizes with capacities of 250 to 3000 gallons per hour. Electric motor or gasoline engine driven.



Disassembled view showing Westco's patented Removable Liners, Impeller and Casings

Do It Now!

Westco Franchises are *exclusive* Franchises. Act Now! Send in the coupon below for FREE colorful catalog and new, low prices.



WESTCO CONDENSATE & BOILER FEED PUMPS

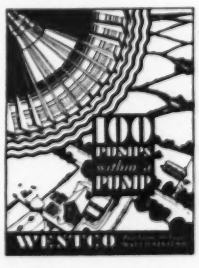
For automatically returning condensate from radiation systems, heaters, steam coils, etc., to low and high pressure steam boilers

WILL operate against variations of as much as 50% either way in head against which they were intended to operate without materially affecting their delivery or efficiency. Handles large volumes of steam or air—*cannot become air or vapor bound.*

Extremely compact and quiet in operation. Sizes for service on layouts having from 2,000 to 50,000 sq. ft. radiation surface, and requiring from 4 to 400 g.p.m. against heads as high as 200 lbs. pressure per sq. inch.

Use Coupon Below!

Just fill it in and *mail today.* Complete details will promptly be sent. Westco Pump Corporation, Davenport, Iowa. *Branches:* New York, Philadelphia, Chicago & San Francisco. *Jobbers in 50 Principal Cities.*



COUPON *BRINGS* CATALOG

WESTCO PUMP CORPORATION
Davenport, Iowa, Dept. D-1.
Gentlemen: Without cost or obligation, please send me complete catalog, prices and dealer proposition on the following: Westco Water Systems ☐, *Westco Condensate & Boiler Feed Pumps* ☐.

Name .....
Address .....
Town .....
State .....

WESTCO *TURBINE* PUMPS

Blue Surface—The result of insufficient thickness of enamel, and if not pronounced is not sufficient cause for rejection of Enameled Ware.

Cracked Fixture—A fixture with a rupture extending through both the casting and enamel—caused in practically all cases by careless handling.

Waviness—A certain amount of waviness in an enameled surface is unavoidable and is not cause for rejection.

Warpage—An allowance of 1/32 in. per foot is allowed on the edges in contact with walls, and 1/16 in. per foot on other edges, as noted in table on preceding page. Warpage in the bottoms of fixtures, which does not prevent drainage, is not cause for rejection.

Have Joined Heating and Piping Contractors Boston Association

Announcement is made that the Bryan Engineering Corporation of Boston has joined the associate member division of the Heating and Piping Contractors Boston Association. The company is headed by R. D. Mayo.

The Boston association also has accepted the application as a contractor member of the Power Heating & Ventilating Co. of 263 Harrison Avenue, Boston.

Trouble—

(Continued from Page 37)

were joined with the radiator return lines and were carried by one header to the boiler return connection. All of this is shown by the illustration marked Fig. 1. The important thing is that short circuiting is eliminated by making the return connections into the header below the water line. In other words, it is impossible for the vapor from one return to enter another return and thus close the vent before all of the air has been eliminated from the line. The instance encountered here is relatively simple. Where banks of heaters are connected together, the problem becomes more involved. However, the fundamentals are the same, namely, that air must be eliminated from the heating units and lines in the quickest and most effective way possible. It is safe to say that there would be relatively few heating troubles if all of the piping, heating elements and accessories were transparent so that it would be possible to see what is going on inside. Instead, it is necessary to listen, and feel and then reason what is taking place as a result of studying the arrangements.

Philadelphia Master Plumbers' Ladies Night

Philadelphia Master Plumbers' Association held its annual "ladies' night" in the office of the Philadelphia Gas Works Co., Broad street and Erie avenue, Philadelphia, on Wednesday evening, December 7.

At this meeting every master plumber was given the opportunity to bring his wife, his daughter and his bookkeeper to the gas company's office to see how modern gas appliances can lighten household duties, and the meeting brought out 100 ladies and 150 master plumbers.

F. M. Swonguer, sales promotion manager of the Philadelphia Gas Works Co., was chairman of the meeting and welcomed the master plumbers and their guests, after which he introduced Miss M. Heist, Mrs. Teril Irwin and Mrs. Lillian Maynard, all of the gas company's home service division, who in turn demonstrated the automatic gas range, refrigeration, and the gas iron and presser.

S. W. Girriel, merchandise manager of the Philadelphia Gas Works Co., was the next speaker and explained a new merchandise plan which has just been sponsored by his company, and he urged the master plumbers to participate in this campaign and profit thereby.

Dr. F. R. Cowl, research director of merchandise for the Curtis-Martin Newspaper Co., gave a very interesting talk about various periods in civilization in relation to merchandising. In the first and second periods there was no need of selling because all products made were always in demand. In the third period various manufacturers expanded and sold their products far from their home plants. This brought the machine age, when the manufacturer could make anything in any quantity and distribute same, which developed the need of selling.

Maney J. Feeney, president of the Philadelphia Master Plumbers' Association, thanked the officers of the Philadelphia Gas Works Co. for the splendid co-operation which they are giving the master plumber; he also thanked Edward Quaid and Walter Raid of the Master Plumbers' Association for their work on the gas commission and James Manger and James Richards of the gas company who are calling on the master plumbers.

Philadelphia Master Plumbers hear address on new merchandising plan, in the office of Philadelphia Gas Works Co.

Modernization —

(Continued from Page 32)

ond place, for no good reason at all, it is at least 1 ft. off center.

Since it was no trouble to find fault with the radiators, we expected to run into all kinds of mistakes when we went to the basement, but while bad it was not as bad as we expected. The blow-off connection left on the boiler, as shown in Fig. 4, looks awkward, and the pipe covering job is nothing to brag about, but the prize evidence of slovenly workmanship, poor judgment, or lack of experience, is shown in Fig. 5, the installation of a quick vent. Here a joist was notched to permit the installation of a vent on the main when this vent might have been run up at the side of the joist.

The owner of this building, when he accepted the job, probably did not know any better or was told that it could not be done any better by the contractor, but he has found out differently now for would-be tenants have told him, and he is hard put to it to keep the place rented on account of the unsightliness of the heating equipment.

Unlike most new work, heating modernization is seldom let entirely on a price basis, and a contractor has an opportunity to sell himself, his ideas, his service, and his organization to a customer. If he goes to an owner with a proposition stating that he includes in his proposal the removal of all hot air furnace registers and the repairing of the floors where they are taken up, that any tile work disturbed in the bathroom shall be replaced in good condition, or similar suggestions, that owner is going to begin to take notice of his bid.

Again it may be only a question of how the radiators are painted that will make a heating modernization customer a booster or just another customer. Ask the average owner how he wants his radiators painted, and he will say aluminum or gold, because he has seen other radiators painted that way. It is up to the contractor to tell him that the radiator in his bathroom will look much better painted white and that the one in the dark corner of the hall will hardly be noticed if painted brown to harmonize with the woodwork. It is up to the contractor to see that a radiator placed under a window allows space at either end for drapes to hang straight, should it be desired to have them fall to the floor. It is necessary for him also to consider that radiator covers may be installed later in which event it should be possible to cover the connection to the radiator without interfering with these same drapes, and space must have been allowed so that the cover will not extend above the window sill.

The truth of the matter is that there are many future possibilities to be considered in installing a heating modernization job. If additions are contemplated or it is later intended to heat the garage, boiler capacity should be figured accordingly, or if oil may be used as fuel at some future date, this should be given consideration. The heating contractor, while he will not be directly responsible if the boiler he installs now is not big enough next year or not adapted to burning oil, will avoid future criticism if he will consider these and other possibilities when making his present recommendations.

A STRONG SMOOTH WELD

Fretz-Moon Pipe is welded to last. The exclusive process and accurate control under which it is made produces steel pipe second to none—pipe that will resist rough handling and severe service.

To make doubly sure that every length is without blemish, however, it is given severe tests . . . tests that insure a strong weld, perfection of product and long service life.

In addition to being sound and strong, the weld on Fretz-Moon Pipe is so smooth, so much like the wall of the pipe itself, that it is almost imperceptible.

For a strong, smooth weld, use Fretz-Moon Pipe—in uniform lengths.

FRETZ-MOON TUBE CO., INC.
BUTLER, PENNA.

FRETZ-MOON
PIPE
BLACK AND GALVANIZED

DAHLQUIST
COPPER

HOT WATER
HEATERS—TANKS—BOILERS

The Dahlquist line of Copper Range Boilers, Automatic Water Heaters and large Commercial Boilers is the most profitable and fastest-selling line on the market.

Dahlquist quality—Dahlquist patented Aquatherm feature which saves fuel, and Dahlquist patented Turbo—that prevents sediment from accumulating in the boiler give this line a selling advantage over all other makes.

Supply your trade with a Dahlquist which gives them highest quality patented features at lowest prices.

Architects and heating engineers may rely entirely on Dahlquist workmanship and experience, whether for range boilers, automatic storage boilers or heavy pressure boilers.

Write for our prices before you order

DAHLQUIST MFG. COMPANY
60 West Third Street, South Boston, Mass.

IT PAYS TO STANDARDIZE ON
Jarecki
drainage FITTINGS
because they have
1
EXTRA LARGE BANDS
2
FULL WEIGHT WITH HEAVY WALL
3
FULL DEPTH OF RECESS
4
FULL STANDARD LENGTH
5
CLEAN CUT CHAMFERED THREADS
JARECKI MANUFACTURING COMPANY
ERIE, PA., U. S. A.

NEW TRADE LITERATURE

Pamphlet on Copper Pipe Benders

Hays Manufacturing Co. of Erie, Pa., has issued a neat pamphlet, which illustrates and describes in detail its line of copper pipe benders, designed to bend hard and soft copper pipe easily and speedily.

Folder on Sinks for Large or Small Kitchens

Kohler Co. of Kohler, Wis., has just issued a folder for consumer distribution under the title of "Sinks of Greater Usefulness," 12x16½ in., illustrating and describing a large variety of sinks for large or small kitchens, as well as new styles of mixing faucets for kitchen sinks.

Folders on Flush Valves

Speakman Co. of Wilmington, Del., has just issued two neat folders illustrating and describing its new flush valve which is described as being noiseless in operation and constructed in such a manner that it can be adjusted almost instantly both in regard to velocity and quantity of water.

Steam Heating Rates

"Condensed and Tabulated Steam Heating Rates" for the season of 1932-1933 have just been issued by The Ric-wiL Company of Cleveland, Ohio. This publication carries the heating rates for more than 180 cities and is often referred to by engineers, architects, engineering schools, utilities and libraries.

Broadside on Room Cooler and Air Conditioner

The Strang Air Conditioning Corporation of Kansas City, Mo., has issued an attractive broadside, 18x24 in. in size, illustrating and describing its line of portable, self-contained, all electric air cooling and dehumidifying devices. This broadside illustrates how this room cooler and air conditioner can render a great service in residences, offices, stores, barber shops, restaurants, beauty shops and hospitals, etc.

Wall Hanger Shows Oil Burners

Wayne Oil Burner Corporation of Fort Wayne, Ind., has just issued an exceptionally attractive wall hanger featuring its line of oil burners, which are described as being of rugged construction assuring long life of trouble-free service, while their gleaming chromium finish make them ornaments in the homes where they are installed. The wall hanger is printed in many colors and bound to attract much attention.

Catalog of Heating and Ventilating Units

John J. Nesbitt, Inc., of New York City has issued a 32-page catalog of its heating and ventilating units, under the title of "Syncretized Air." The catalog illustrates and describes this concern's copper radiators, its types of damper control, and its various heating and ventilating units. The value of the catalog is enhanced by the addition of many tables of capacities as well as many drawings of installations of these units.

Booklet on Comfortable Heating

"How to Obtain Comfortable Economical Heating" is the title of a new 16-page treatise published by the Commodore Heaters Corporation of New York City, manufacturers of built-in heaters. In an interesting and thorough manner these subjects are treated: Heating Methods of Nature, How Radiation Gives Heat, How Convection Gives Heat, What Constitutes Good Heating, Results That Are Possible, and Fulfilling the Requirements. The booklet is well illustrated, and the two-page center spread shows installation details for five types of this concern's heating appliances.

Bulletin on High Convection Radiators

Shaw-Perkins Mfg. Co. of Pittsburgh, Pa., has issued its bulletin 50-A, describing and illustrating the construction of its high convection radiators for steam and hot water heating, cooling, drying and industrial applications. These radiators are made of heavy gauge, highly refined iron, and welded construction eliminates all mechanical joints. They are light in weight, easily cleaned, compact and adaptable, and heat quickly. Tables of sizes, dimensions, and heat emission are included in this bulletin.

Bulletins on Gas Heating Boiler and Gas Burner

Bastian-Morley Co. of La Porte, Ind., has just issued two bulletins, one featuring its gas-fired boiler for steam, vapor or hot water heating and volume water heating, and the other describing and illustrating its new gas burner which can be installed in any round type, coal burning boiler or furnace, permitting automatically controlled gas heating efficiency. The gas-fired boiler is equipped with all necessary controls for safe automatic operation, easy to install, requires little floor space, and as the combustion chamber is water-jacketed, installation on any type floor is possible.

Booklet on Air Conditioning and Elimination of Noise

Campbell Metal Window Corporation, a division of American Radiator & Standard Sanitary Corporation of New York City, has issued a twelve-page booklet, 8½x11 in., illustrating and describing its line of silencers and air conditioners, which are designed to accomplish any or all of the following seven tasks: 1. Elimination of Noise.—2. Ventilation.—3. Air Cleaning.—4. Humidification.—5. Heating.—6. Dehumidification.—7. Cooling.

Folder on Gas Heating Boiler

J. H. McCormick & Co. of Williamsport, Pa., have issued a folder, 16x18 in., featuring their gas heating boiler with double steel tubes, set one within the other, with only 9/64 of an inch between them. Heat passes up inside the inner tube, over baffles in the dome, then down over the outside of the outer tube. A maximum amount of heat is thus applied from both sides, to a thin column of water, less than 1/7 of an inch thick. This arrangement makes for quick steam. Another reason for the speedy action of this boiler is that it contains a relatively small quantity of water.

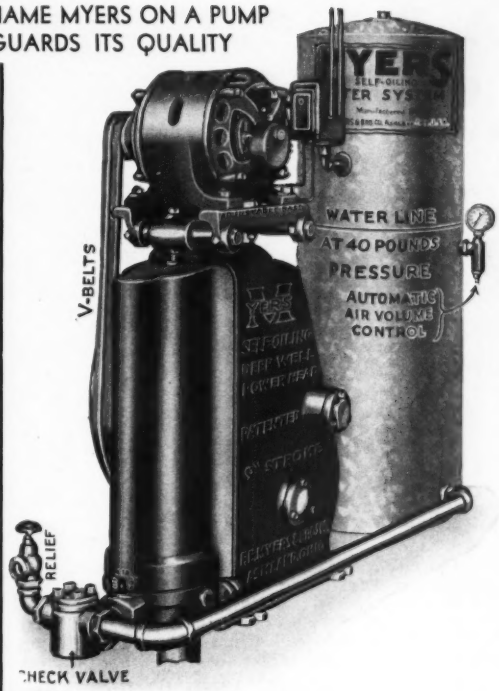
Hot Water Supply Manual

American Gas Products Corporation Division of American Radiator Co. of New York City has issued a "Hot Water Supply Manual," presenting tables and general information in an effort to simplify the calculations necessary in determining the proper and most efficient gas boiler equipment required to give both the desired temperature and the correct quantity of water. A gas boiler has a constant Btu. input and a positive firing efficiency, thus enabling close figuring and a resulting high economy. The company's line of gas water heaters are also described and illustrated in this manual with chapters on: The Heating of Water for Swimming Pools, Gravity Water Tank Heating, Chimney Data, Water Temperature Control, Cross Connecting Boilers. The manual consists of 28 pages, 8½x11 in., bound in a cover of blue paper.

Stainless Steels and Their Uses

Electro Metallurgical Company of New York City has published a twenty-page booklet, 8½x11 in., entitled "Stainless Steels and Their Uses," discussing stainless steels, a comparatively large group of chromium and chromium-nickel steels. These steels contain from 12 to 20 per cent chromium, with or without additional alloying elements. Of these, the 18 per cent chromium, 8 per cent nickel steel is probably the most widely used at the present time. Stainless steels

THE NAME MYERS ON A PUMP SAFEGUARDS ITS QUALITY



QUALITY COMES FIRST

Prices may be low. Terms may be inviting. Promises may be tempting. But the fact still remains that the fortress guarding sound business policies, sales and profits is QUALITY.

That is the reason the name MYERS on a pump or water system is important. For over sixty years it has steadfastly guaranteed originality, progressiveness and reliability in the development, production and distribution of pumping equipment.

Today, as ever, this name carries selling power and prestige. It distinguishes a quality line of pumps and water systems that in prosperous as well as in lean periods consistently makes money for dealers.

A copy of the new Myers Catalog will be mailed promptly, or, if you wish, one of our representatives will see you.

THE F. E. MYERS & BRO. CO.
ASHLAND, OHIO
PUMPS, WATER SYSTEMS, HAY TOOLS, DOOR HANGERS

A Revelation in Cutting *Copper and Brass* TUBING NOW

SMOOTHER
FASTER
with the *NEW*

SELF-STARTING

MILFLEX DUPLEX PATENTED U.S.A.
HACK SAW BLADE

The cut starts on the *First Stroke.* Fine teeth on forward end take hold instantly—no scraping back and forth. A blade that is finely made, hardened and tempered. No breakage—no ripped out teeth. Far in advance of the ordinary blade *at no extra cost.* A trial will convince you of its superior qualities.

SEVEN OUTSTANDING FEATURES

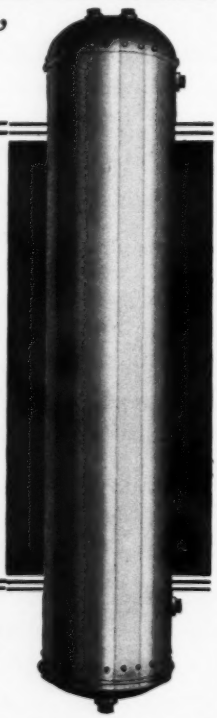
1. Starts cut at any angle.
2. Teeth will not catch in corners.
3. Starts quickly with a full cutting stroke.
4. Reduces cutting time.
5. No scraping to begin cut.
6. Will not slip off cutting line.
7. Distributes wear full length of blade.

The HENRY G. THOMPSON & SON CO.
NEW HAVEN, CONN.

ORDER FROM YOUR JOBBER

"COPPER FOR SATISFACTION"

for "Peak Sales" in 1933—



Today's demand for "more value for each dollar spent" is convincingly met by the improved

G & C DOMESTIC
Riveted Top and Bottom
COPPER RANGE BOILER

Advanced in design, its sturdy construction, with solid copper rivets top and bottom, heavily backed with solder . . . its convenient removal of sediment from low point of bottom of tank and other points of superiority makes this—the outstanding sales leader in its field!

Write for descriptive circular.

A *G&C* Boiler for every type installation

Hotels, apartments, clubs, residences, public buildings. Inquiries solicited.

GERSTEIN & COOPER
1-3 West Third Street
South Boston, Mass.

are particularly well adapted for use in resisting atmospheric corrosion, attack from oxidizing agents, and scaling at elevated temperatures. Because of their physical properties and corrosion resistance, they are continually finding new uses in place of ordinary steel and cast iron. These alloy steels are employed in practically every branch of industry; and in certain fields their characteristics have brought them into prominence. Chief among these are the food and associated industries, petroleum, chemical, high temperature and pressure fields. These and many other applications are discussed in detail in this booklet, which is well illustrated.

Engineering: A Career—A Culture

The Education Research Committee of the Engineering Foundation, Engineering Societies Building, New York City, has just published a 62-page pamphlet, "Engineering: A Career—A Culture," addressed to young men and to parents and teachers, giving a clear survey of the broad field of engineering. The professional functions of the engineer are stated with the precision which accompanies intimate knowledge of engineering in theory and practice. The major divisions of engineering are dealt with from this standpoint, the text being "descriptive of the profession of engineering —of its spheres of action, of the training and the qualities required for its successful pursuit; of the obligations which it imposes, and the rewards which it affords." In other words, the pamphlet tells much about what engineers do, including sanitary engineers, and what qualities of mind and character a boy should have to become an engineer. There is information on the schooling that a boy should have and on engineering colleges; also on the training he should acquire after his schooling is ended and he goes to work.—The price of this pamphlet is 15 cts. a copy, and it can be obtained from Engineering Foundation at the address given at the beginning of this item.

"Planning and Building the City of Washington"

The Washington Society of Engineers has just issued "Planning and Building the City of Washington," under the editorship of Frederick Haynes Newell, past president of the society. This is a graphic account of the planning and construction of the capital city of the United States, by architects and engineers who have helped in its designing and development. Persons interested in civics, economics, and geography will find much reference material to illustrate good principles of city planning, sanitation, water supply system, and drainage and sewerage. The book consists of 264 pages, with 82 halftone illustrations, 8 maps and 5 charts, bound in red cloth with gold stamp, and costs $2. The publisher is Ransdell Incorporated, Washington, D. C.

"House Design, Construction and Equipment"

"House Design, Construction and Equipment," the fifth volume in the series of publications of the President's Conference on Home Building and Home Ownership, containing reports of the Committees on Design, Construction and Fundamental Equipment by William Stanley Parker, Albert P. Greensfelder and Collins P. Bliss, chairmen. The book is divided into six chapters as follows: I. Design of the Dwelling.—II. Dwelling Construction.—III. Heating, Ventilating and Air Conditioning.—IV. Plumbing and Sanitation.—V. Electric Wiring and Lighting.—VI. Refrigeration.—The chapter on Heating, Ventilating and Air Conditioning was drafted by Professor A. C. Willard of the University of Illinois, Professor Philip Drinker of Harvard University, W. H. Driscoll, past president of the American Society of Heating and Ventilating Engineers, and Perry West, consulting engineer of Newark, N. J., while the chapter on Plumbing and Sanitation was prepared by A. E. Hansen, hydraulic and sanitary engineer of New York City; E. F. Carter, director

of the Division of Standards and Inspection, Department of Labor, Raleigh, N. C.; W. H. Driscoll, vice president of Thompson Starrett Co., New York City, and Jere L. Murphy, of New York City, chairman of the Standardization Committee of the National Association of Master Plumbers. The fact that these outstanding members of the heating and plumbing industries prepared these two sections of this book will no doubt make it a valuable addition to the trade library of plumbing contractors and heating dealers.—This is a 326-page book, bound in blue cloth with gold stamp, and it can be obtained for $1.15, when ordered from the President's Conference on Home Building and Home Ownership, New Commerce Building, Washington, D. C.

"Housing America"

"Housing America," by the Editors of "Fortune." 160 pages, with 23 halftones, bound in white cloth. This book is a revelation of present housing conditions in America and a forecast of what the future in housing may be. The first part gives the facts about housing as it is, and is divided into five chapters, as follows: 1. The Need; A country in which half the homes fall below minimum standards of health, and where the building industry is bound and helpless.—2. The Prime Raw Material: Land, how acres ripen into building lots; buying raw material at retail.—3. How Much House for a Dollar, being the history of a $20,000 house that cost $40,000.—4. The Wages of Labor; the problems of labor in the building industry.—5. Debt and Taxes—and certain more hopeful aspects of the city's role in housing. The second part consists of a forecast of the future with housing as it will be, containing a chapter on the industry's answer, which is said to be the manufacture and sale of steel houses, with two possibilities: (1) Mass production and distribution by some one company already equipped with a modern plant capable of conversion to housing manufacture; and (2) mass assembly and distribution by some central organization drawing upon and coördinating the various existing manufacturers of housing materials. The last part of the book is devoted to continental housing since the war, subdivision costs and layouts, a primer of mortgages, money in slums, and the Dymaxion house.—The price of the book is $2, and it is published by Harcourt, Brace & Co. in New York City.

BUSINESS CHANGES

Clinton, Iowa.—George Hardison has moved his plumbing and heating business to 218 South Second street.

San Francisco, Calif.—George E. Rose Co. has moved its plumbing and heating business from 461 to 451 Hayes street.

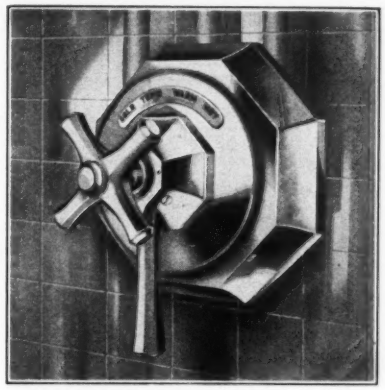
Montevideo, Minn.—Wm. M. Mickelsen has moved his plumbing and heating business to new quarters on North Eighth street.

Seattle, Wash.—The plumbing firm of Wenzler & Ward has moved from 2424 Fourth avenue to larger quarters in the Textile Tower.

San Francisco, Calif.—The All Make Water Heater Service Co. has moved its establishment from 387 Hanover street to 5318 Mission street.

Kalispell, Mont.—The Service Plumbing & Heating Co. has moved its business to larger quarters in the First National Bank Building.

San Francisco, Calif.—William Carmichael has moved his plumbing and heating business from 1840 Taraval street to 1281 Thirty-first avenue.



As POSITIVE *in* OPERATION *as it is* HIGH-CLASS *in* APPEARANCE

The LEONARD

Leonard Mixing Valves add to the appearance of any bathroom in which they might be installed. That is saying a lot, but what is of more interest to shower users is the fact that they are actually POSITIVE in operation. With the indicator set at 100 degrees the water will maintain that temperature constantly as the amount of water going into the valve is thermostatically controlled.

Write for the Leonard Catalog

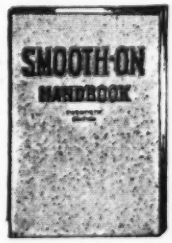
LEONARD-ROOKE CO., *Incorporated 1913*
ELMWOOD STATION PROVIDENCE, R. I.

The dependable combination for tight joints

SMOOTH-ON CORRUGATED IRON GASKETS coated with SMOOTH-ON NO. 3

FLANGED joints that never did stay tight can be put on their good behavior *and made to stay there* by using the above combination. Try it where the trouble comes from excessive vibration, extreme pressure, thin hot oil, superheated steam or wide temperature variation.

If you do not have Smooth-On Gaskets handy, at least use Smooth-On No. 3 as a filler. Increases holding strength and useful life of any reasonably good gasket material.



Get Smooth-On Gaskets in pipe sizes from 2 in. to 24 in., and Smooth-On No. 3 in 1 or 5-lb. can or 25 or 100-lb. keg from your supply house or from us.

Write for the Smooth-On Handbook

SMOOTH-ON MFG. CO., Dept. 12
570 Communipaw Ave., Jersey City, N. J.

Do it with **SMOOTH-ON**

Heating Comfort Assured

The Sarco Heating System not only makes buildings more livable in cold weather, but it cuts out steam waste and helps to secure an operating profit in spite of reduced rents. It increases rentability and property values out of all proportion to its original cost.

That Sarco Vacuum and Vapor Heating Systems are simple, durable and trouble-proof, has been demonstrated by hundreds of installations made during the past 20 years.

Here are a few of the important features of

SARCO Radiator Traps

The entire body is of non-corrosive cast bronze—not cast iron with a separate bronze seat which may leak.

The bellows is of the helically corrugated type, made from seamless phosphor bronze tubing—from 9 to 14 corrugations, according to size—not single or double disc diaphragms soldered together and quickly fatigued.

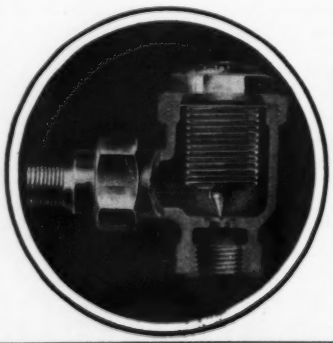
The valve heads are self-aligning and conical, to make line contact with the seat.

Sarco Steam Traps operate noiselessly and economically.

Write for Catalog M-45

SARCO HEATING SYSTEMS

BUILT TO A QUALITY STANDARD



Sarco Co., Inc.
183 Madison Ave.
New York, N. Y.

Branches in Principal Cities
Sarco Canada Ltd., Federal Bldg., Toronto, Canada

NEW CONTRACTORS & INCORPORATIONS

Detroit Lakes, Minn.—John P. Belmont, formerly of Brainerd, Minn., has opened a plumbing and heating establishment here.

Hollis, L. I., N. Y.—Nauman & Behn is the name of a new firm of plumbing and heating contractors, which has started in business at 99-05 194th street.

Virginia Beach, Va.—The Harris Plumbing & Heating Co. has been incorporated with a capital of $15,000. V. B. Harris is at the head of this new venture.

Ottumwa, Iowa.—Hercules Plumbing & Heating Co. has just started in business at 112 South Washington street. The owner of the business is A. D. Taylor.

Olivia, Minn.—Axel Markuson, formerly engaged in the plumbing and heating business at Buffalo, Minn., has opened a plumbing and heating business here.

Los Angeles, Calif.—The Pangborn Plumbing Co. has opened a plumbing and heating business at 5015 South Western avenue, under the management of H. C. Pangborn.

Tujunga, Calif.—A branch of the A. F. Schreiber Plumbing Company of Los Angeles has been opened at 7121 Valmont street, under the management of H. D. Chase.

Los Angeles, Calif.—Edward Burke has entered the plumbing and heating contracting business with headquarters and shop at 1031 West Pico street.

Los Angeles, Calif.—D. E. Rowland, former manager of the plumbing department of the N. N. Sheetz Hardware Company of this city, has gone into the plumbing contracting business under his own name at 3950 West 10th street.

Drexel Hill, Pa.—The Drexel Hill Plumbing and Heating Co., at 4041 Garrett road in this city, has been opened by Thomas H. Bonner and Albert Irvin, formerly members of D. S. Sanderson, Inc.

Los Angeles, Calif.—A plumbing contracting business headed by Julius Strohmeier has been established at 3742 McKenzie avenue. Mr. Strohmeier for the past five years was connected with the firm of Louis Mellinkoff, and before that time with Lohman Bros., both of this city.

Los Angeles, Calif.—A new plumbing and heating contracting business, the Dudley Haverty Company, headed by Dudley Haverty, has established shop, showroom and office headquarters at 833 South Carondelet street.

Minneapolis, Minn.—The Flemming Plumbing Co. has been incorporated with a capital of $10,000, to conduct a plumbing and heating business. Ernest J. Flemming is at the head of this new venture.

Omaha, Nebr.—The Dudley Hamilton Co. has been incorporated with a capital of $10,000, to conduct a plumbing and heating business. The incorporators are Dudley Hamilton, M. A. Hamilton and L. B. Bramlett.

Oakridge, Ore.—The Cascade Utilities, Inc., has been incorporated with a capital of $10,000, to engage in the heating business. Claude R. Jones is at the head of this enterprise.

Culver City, Calif.—The Plato Jackson Plumbing Co. has opened a plumbing and heating business at 6552 Washington boulevard. Plato Jackson of 8914 Emmalec street, Los Angeles, Calif., is in charge of this business.

Los Angeles, Calif.—E. E. Hockett, for 22 years a member of the recently liquidated Thomas Haverty Company of this city, has established a plumbing and heating contracting business under his own name with shop, office and showroom at 2722 East Fourth street.

WHAT WOMEN ARE DOING

BY DOROTHY EDWARDS

Greetings from Mrs. J. Preston Perham

Mrs. J. Preston Perham

The Old Year has gone and we are glad to close the book with its record of heartaches and disappointments, and start a new clean page whereon we hope to write a better story than was written in 1932.

We all had many things to be thankful for in that old year, although at first thought it would seem otherwise. It is well that hope springs eternal in the human breast else we should be most miserable in this time of distress and uncertainty. Let us, as good auxiliary members greet this new year with shoulders squared and a smile on our faces. We have work to do, let us not become discouraged and thereby lose our power to accomplish the tasks set before us.

We know many auxiliaries are having it rather hard, but won't you try to hold together and don't give up in despair? Surely this new year holds something good for us though it is as

> "A flower unblown, a book unread,
> A tree with fruit unharvested,
> A path untrod, a house whose rooms
> Lack yet the heart's divine perfumes;
> A landscape whose wide border lies
> In silent shade 'neath silent skies;
> A wondrous fountain yet unsealed,
> A casket with its gifts concealed;
> This is the year that for you waits
> Beyond tomorrow's mystic gates."

And it is the wish of your president that it may be a very happy one.

Perhaps you will be glad to know that the committee on the Student Loan Fund for Master Plumbers Daughters is at work and hopes to bring a report to the National convention that will meet with your approval.

A donation of twenty-five dollars ($25.00) has been received for that fund from the Denver Auxiliary, for which we are grateful, and we hope that other donations will follow, if it is convenient for auxiliaries to make them. We do not wish to overburden those who do not feel in financial condition to do so.

At this season of the year we know that all auxiliaries are doing something for those who are less fortunate. I am proud of your record in that respect. So many things have come to my ears recently of your kindness to those in distress, that I am rejoiced to be at the head of such a body of women.

I wish to express my heartfelt thanks to those who helped to make my trip to the West Coast such a delightful one. To those who entertained me at their homes I am most grateful.

The contacts made, and the many happy occasions when members and president met together will long be remembered and treasured in my heart. I am sorry that I could not visit every auxiliary.

We have but six more months before convention time, so let us get to work with a will and may we all have wonderful reports to bring in. We wonder what auxiliary will get the prize for new members this year?

May I ask that when a member is seriously ill, that someone in her auxiliary notify this office? We will be very grateful if you will do this. We were shocked a short time ago to hear of the passing away of our past first vice-president, Mrs. George Frank of Buffalo. We, who knew her, loved her and shall miss her from our auxiliary circle. Our deepest sympathy goes out to her family in their great loss.

May the year 1933 bring us less sorrow and more joy!

MRS. J. PRESTON PERHAM *as* President, Women's Auxiliary to National Association of Master Plumbers.

Mrs. E. D. Hornbrook Entertains Mrs. J. Preston Perham

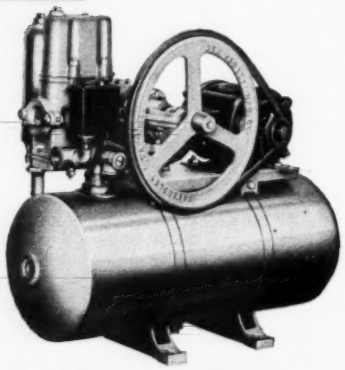
Mrs. J. Preston Perham was the house guest of Mrs. E. D. Hornbrook, past president of the national auxiliary during her stay in Kansas City, Mo. Mrs. Hornbrook honored Mrs. Perham with a luncheon at which covers were laid for six. Decorations were lovely pink roses. Yellow candles in crystal holders added to the lovely setting. Later they enjoyed a drive through Kansas City.

Mrs. Perham was also the guest of honor at a dance and bridge party given by the Kansas City auxiliary. The following day a sight-seeing trip was enjoyed and in the evening the group "rummaged" through old records of the early days of the auxiliary, which proved of interest to Mrs. Perham, who is the fourth national president.

Left to right: Mrs. E. F. Spaeth, Mrs. I. E. Henderson, Mrs. W. Ball, Mrs. E. D. Hornbrook, Mrs. Cowger and Mrs. J. Preston Perham, during the latter's visit to Kansas City a few weeks ago

$42.50

Complete to the Consumer



THE LOWEST PRICED

SHALLOW WELL SYSTEM

on the Market TODAY

HERE, Mr. Dealer, is what you have been waiting for—a shallow well reciprocating type water system, at such an amazingly low price, as will enable you to meet all competition. There isn't any other unit which is priced to the consumer at such a low price. And, don't forget—the unit is made and guaranteed for quality and performance by the Red Jacket Manufacturing Company, makers of pumps and water systems for 57 years.

250 Gallons per Hour. This outfit delivers 250 gals. per hour from well or cistern up to 22 ft. in depth. Plenty of water for kitchen, bathroom, laundry, stock troughs, etc.

A Big Special Feature of this pumping unit is the Water Lubricated Bearings which require no oil. This means no piston rod stuffing-box leakage; no oil polluted water in pumping system; no water polluted oil in crankcase. ¼ H. P. Motor, 110 single phase motor. Pressure Switch; Relief Valve; Galvanized Tank, 8-gal. size; "V" Belt Drive. Everything complete.

This system is priced to sell under present conditions with a margin of profit you will appreciate.

• *Write for discounts and complete information.*

RED JACKET MANUFACTURING COMPANY

DAVENPORT, IOWA

DORWARD-

Red Jacket

WATER SYSTEMS

& DEEP WELL POWER HEADS

Mrs. E. D. Hornbrook Thanks Many Friends for Flowers and Greetings Received on 75th Birthday

Friends of Mrs. E. D. Hornbrook made her extremely happy on her 75th birthday by sending gifts and messages. Greetings came from National President E. B. Kleine, National Secretary Ed. Frank and Past President John J. Vogelpohl, as well as many auxiliaries. In her letter, Mrs. Hornbrook says "I know I shall never be able to acknowledge all of these unless you will do it for me on the auxiliary page. It was a perfect day in the autumn of my life." In spite of her recent birthday, Mrs. Hornbrook, who is a past national auxiliary president, continues to be active in auxiliary work. On December 17 the Kansas City, Mo., women met at her home for a Christmas party. Dancing, singing, music, games were enjoyed, and Santa Claus distributed gifts, which added much to the enjoyment of the day.

Ogden Auxiliary Very Active

The Ogden, Utah, Auxiliary held an interesting meeting on December 1 at the home of Mrs. Milton Bachman. After the usual business procedure, plans were made for a Christmas meeting at the home of Mrs. Charles Bishop. At this meeting officers for the new year are to be elected. After the business is finished, each member gets a number which corresponds with a numbered gift in a huge basket. There is always much enjoyment in the scramble to get to the bottom of the basket.

The annual Christmas dinner to which the husbands of the members of the auxiliary are always invited took place some time during the holidays. This is another very pleasant affair and is always considered the end of social affairs for the old year.

Los Angeles Auxiliary Elects Officers

Election of officers for the 1933 term constituted the principal item of business transacted at the December 1 meeting of the Ladies' Auxiliary of the Merchant Plumbers' Association of Los Angeles held at Plumbers' Hall in that city.

Named to executive positions were Mrs. Dan M. Pellicciotti, president, to succeed Mrs. Frank Brown; Mrs. Rose McArthur, first vice president, succeeding Mrs. Pellicciotti; Mrs. E. J. Carroll, second vice president, succeeding Mrs. McArthur; Mrs. O. Bayho, treasurer, succeeding Mrs. Senz; and Mrs. W. A. Wurth and Mrs. Frank Schilling, Sr., secretaries, to fill the position vacated by Mrs. Carroll.

Oakland Auxiliary Entertains with Big Christmas Party

Merriment ruled in an atmosphere of Yuletide festivities when the Ladies Auxiliary of the Alameda County Master Plumbers Association of Oakland, Calif., tendered a Christmas party to their families and friends at Plumbers Hall, 538 Twenty-fourth street, Oakland, Calif., on the evening of December 19. The assembly hall, with a brilliantly decorated tree at one end and festooned on all sides with holiday greenery, was packed with upward of 125 persons, including the children. In fact, it was essentially a children's party even though the entire membership of the association and the auxiliary, as hostesses, were present, which conforms with a custom long followed by the Oakland auxiliary.

Mrs. W. D. J. Evans, auxiliary president, graciously welcomed the guests, after which the kiddies put on a creditable program of music and recitations, with one eye on the tree. Then came Santa Claus, impersonated by W. H. Picard. Much to the delight of the little ones, Mr. Picard handed each an appropriate gift.

The tree ceremony out of the way, the ladies of the auxiliary served a delicious supper in the banquet room, the children enjoying ice cream and cake by themselves while opening their presents. Following supper, the adults made merry with a "josh" tree, and danced until a late hour.

A special feature of the occasion was the announcement that the auxiliary had presented three generous dinner baskets and a quantity of groceries to deserving families.

Among those, in addition to their president, Mrs. Evans, responsible for the success of the occasion, were Mrs. Arthur Johnson of Berkeley, Mrs. R. W. Timmons of Richmond, and Mrs. Robt. Duncan, Jr., Mrs. D. W. Durant, Mrs. J. Rankin and Mrs. N. J. Previati of Oakland.

St. Louis Auxiliary Elects Officers

The regular business meeting of the St. Louis, Mo., Women's Auxiliary was held on December 8 at the Carpenters Library with an attendance of 20. At this time the officers for the ensuing year were elected. Later a Christmas party was held at which time a donation of $15.00 to the various day nurseries for coal, etc., was made. Clothing and toys were also distributed to the poor. The installation of officers will take place at the Saums Hotel on January 12. Mrs. J. Els, president, wishes to extend the season's greetings to her new officers and members.

Philadelphia Auxiliary Installs Officers

The Ladies Auxiliary of the Philadelphia, Pa., Master Plumbers' Association held its annual meeting for the purpose of electing officers at Fuhrmann Inn, December 1, and it was well attended. At the nomination, it was voted to keep the officers who have served the auxiliary so ably during the past year, namely: Mrs. George Diggins, president; Mrs. M. Stratton, vice president; Miss Violet Jacoby, secretary; Mrs. John F Seibel, treasurer. The board of directors consists of Mrs. George F. Uber, Mrs. Charles Jann, Mrs. James Soehle and Mrs. Eugene Quindlen.

Mrs. M. J. Feeney gave a short talk regarding the national auxiliary. The auxiliary is active in Red Cross work and the Master Plumbers' Association gave the auxiliary $51.00 to its funds for Christmas baskets.

Cincinnati Women's Auxiliary Enjoys Christmas Party

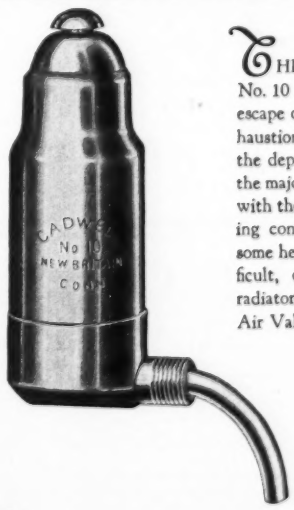
The Cincinnati, Ohio, Women's Auxiliary held a lovely Christmas party in conjunction with its regular business meeting in the conference room of the American Building on December 6. Mrs. George Doench, president, was hostess at the card party held immediately after the business meeting. Prize winners at the card party were Miss Alma

Front row, left to right: Mrs. Edward Simpson, Pacific Grove; Mrs. Fred High, Fresno; Mrs. William Koenig, San Francisco, president of San Francisco Ladies' Auxiliary, and Mrs. A. M. Goeddel, Fresno. Back row: Mrs. Roy Murray, San Francisco; Mrs. William Gibb of Boyes Springs, and Mrs. C. A. Merritt, San Jose. Photo taken at the meeting of the Northern California Federation of Plumbing and Heating Industries, held recently at San Francisco

BOILER SOLDER SEAL
THE METALLIC POWDER
HEATING BOILERS
TRADE SOLDER SEAL MARK
"Renew" Cracked Boiler Sections!
BOILER SOLDER SEAL saves your customers the cost of a new boiler section and the delay waiting for it. That's of prime importance today. You make your repair and the section is "renewed."
BOILER SOLDER SEAL is equal in quantity to two quarts of liquid and it attains maximum efficiency either in steam or hot water systems.
You can now repair boiler leaks in the shortest time possible, and yet make a repair that will be lasting; one that will save your customer money and boost your reputation.
Ask your jobber. Get full details at once.
RADIATOR SPECIALTY CO.
Charlotte, N. C. U. S. A.
Canadian Plant and Offices:
520 King St., W., Toronto, Ont.
Manufacturers of W J Boiler and Heating System Cleanser — "It Vaporizes"
BOILER SOLDER SEAL
"THE METALLIC POWDER"

CADWELL

NO. 10 AIR VALVES



THE quick action of CADWELL No. 10 Air Valves in preventing the escape of steam and allowing the exhaustion of air from the radiator and the dependability of this action, are the major reasons for their popularity with the most discriminating of heating contractors. If you are finding some heating system particularly difficult, due to the non-heating of radiators, try CADWELL No. 10 Air Valves.

Get them from Your Jobber

The BEATON & CADWELL MFG. CO.
Established 1894
NEW BRITAIN, CONN.

MADE FOR LONG RUGGED SERVICE

Boiler Tube Cleaners, Flue Brushes, Wire Heater Brushes, Handy Cleaner Brushes, Fire Brooms, Track Brooms.

Tempered Steel

The Worcester line is complete.
Catalog gladly sent upon request.

WORCESTER BRUSH and SCRAPER CO.
10 AUSTIN STREET :: WORCESTER, MASS.

The above slide can be adjusted to fit tray or sink by loosening bolt shown by arrow.
Thread three inches long so the Leg can be made the height wanted.

REDLON
SINK AND TRAY LEG

Here is a self-contained sink and tray leg that is adjustable all ways. They will cut installation time in half and the amount of trouble they save you in ordering alone, will well repay you for trying them. Simply state whether they are to be used for sink or tray.

Also write us for detailed information regarding the complete Redlon line which consists also of adjustable roof flanges, adjustable boiler stands, adjustable tub traps and closet fittings.

Territories available for Manufacturers Representatives

O. M. REDLON
COR. FRONT & FERRY STS. BATH, ME.

Niesen, Miss Emma Niesen, Mrs. George Doench and Mrs. Edward Frank.

The Christmas party held later was sponsored by Mrs. George Doench. Christmas dishes placed on doilies, lighted candles and a large cake with holly decorations in the center of the table looked lovely. The plates were filled with dainty sandwiches all cut in different forms. The auxiliary members thanked the hostess and her assistants most heartily for the lovely party.

The yearly donation of a large quantity of jellies and canned goods was sent to one of the Cincinnati hospitals.

New Britain Auxiliary Elects Officers

The New Britain, Conn., Women's Auxiliary held a meeting on December 10 at the Gas Company's Club Rooms. At this meeting a Christmas party and election of officers took place. The officers for the coming year are Mrs. Herman Feigenbaum, president; Mrs. Albin Dressel, vice president; Mrs. Charles Andrews, treasurer, and Mrs. Juddie Landgren, secretary. There were 35 in attendance who enjoyed dancing, cards and games. Supper was served by a committee consisting of Mrs. Fred Loomis and Mrs. William Fenn. A Christmas tree was placed in the center of the table and pop corn balls at each plate. Red and green made up the color scheme. Mrs. A. Kalberg and Mrs. J. Landgren were on the entertainment committee.

Chicago South Side Auxiliary Meets at Broadview Hotel

The November meeting of the South Side Women's Auxiliary of Chicago, was held at the Broadview Hotel with seventeen members and one guest in attendance. The hostesses for this meeting were Mesdames Taffe, Hazard, Delehant and Bolton.

The regular order of business was taken up after the luncheon. A letter, received from Mrs. C. C. Rosenfield, the state president, was read, in which she suggested that the state dues be reduced to 50 cents in view of present conditions. The members agreed to this reduction. In her letter, Mrs. Rosenfield also called attention to the coming state convention which will be held in Chicago and urged the attendance of as many of our state members as possible.

Mrs. Hazard, entertainment chairman, reported that the receipts of a card party held at the home of Mrs. Delehant totaled $10.05.

Following the business meeting, the ladies enjoyed their usual card games, bridge prizes being won by Mrs. Oscar Larson and Mrs. Fred Hager. The five hundred prize went to Mrs. B. Klein.

Mrs. H. L. Rose Entertains Boston Auxiliary

Mrs. Herbert L. Rose, secretary to the National Auxiliary, recently entertained the Boston Women's Auxiliary at her home in Cambridge. Due to illness in her family, Mrs. Arthur I. Russell, president, was unable to take charge. Mrs. James A. Cotter, vice president, presided.

Mrs. J. Preston Perham, national auxiliary president, gave a most interesting account of her recent trip to the Pacific coast and her contacts with various auxiliaries during her travels. Mrs. James A. Cotter won a Thanksgiving basket donated by Mrs. Russell, and Mrs. Cotter gave it to a needy family. Following the meeting delicious refreshments were served and a pleasant social hour was enjoyed by the members and their husbands.

PIPE LINES CONNECTED BY L·Y·T

THE BEST FOR HIMSELF

The doctor of a country village had two children who were acknowledged by the inhabitants as being the prettiest little girls in the district.

While the two children were out walking one day, they happened to pass quite near two small boys; one lived in the village and the other was a visitor.

"I say," said the latter to his friend, "who are those little girls?"

"They are the doctor's children," replied the village boy. "He always keeps the best for himself."

Oldest Inhabitant (to district visitor): "I be ninety-four and I 'aven't got an enemy in the world."

District Visitor: "That is a beautiful thought."

Oldest Inhabitant: "Yes, miss. Thank God, they be all of 'em dead long ago!"

"Clarence," she called. He stopped the car and looked around.

"I am not accustomed to call my chauffeurs by their first name, Clarence. What is your surname?"

"Darling, madam."

"Drive on, Clarence."

—"Leignton's Gloom Chaser."

"It's all wrong about those Irish being good fighters."

"Yeh?"

"Yeh. Last night me and my brother Gus and two other fellows licked one."

—Exchange.

SAFE IN THE HOUSE

Voice on telephone—Doctor, come quick. My roommate's taken rat poison. What will I do.

Doc—Don't let him go out. He can't die in the house.

MODEL FOR HUSBANDS

The harassed-looking man was being shown over some works.

"That machine," said his guide, "does the work of thirty men."

The man smiled glumly.

"At last," he said, "I've seen what my wife should have married."

—"Haysco Spigot."

NOT TROUBLED FROM THE BACK SEAT

The nervous little man was discussing with the solemn-faced individual, the difficulties he experienced in driving his machine.

"My wife sits in the back seat while I am driving, and nearly sets me crazy with her orders and directions," he exclaimed.

"H'm," said the solemn faced individual, "I'm never bothered that way."

"You're not," inquired the nervous one incredulously, "How come?"

"I drive a hearse."

—"Gluey Gleanings."

PROOF POSITIVE

Young Thing: "I have brought this book back; mother says it isn't fit for me to read."

Librarian: "I think your mother must be mistaken."

Young Thing: "Oh, no, she isn't. I've read it all through."

—"Wall Street Journal."

A man stepped up to a grocer's cigar counter and bought two 10-cent cigars. A Scotchman who was waiting to be served pushed forward.

"You sell those cigars three for a quarter, don't you?" he asked.

"Yes," replied the grocer.

"Well," said the Scotchman, producing a nickel, "I'll take the other one." —"Progressive Grocer."

It is often good policy to leave a few things unsaid.

L. Y. T.

What's Back *of* Your Business?

BUSINESS cannot be built on inferior merchandise.

Wolverine's extensive lines of Dependable Brass Goods and Specialties are made on a single quality standard.

Still this high standard, although moderately priced, has not even today been lowered.

Wolverine knows that only through lasting, satisfactory performance of their products will you be able to install goods in keeping with the character of the service you wish to render.

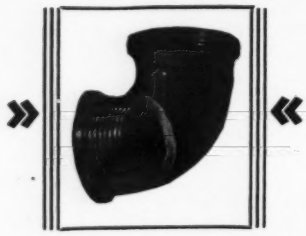
Do not be misled by cheapness—know the Brass Goods you install.

WOLVERINE BRASS WORKS

GRAND RAPIDS (WB) MICHIGAN

We Sell the Retail Plumbing Trade

PIPE FITTINGS



Clean threadways—Tapping to gauge—Absence of sand holes—all go to distinguish—IMICO—Fittings.

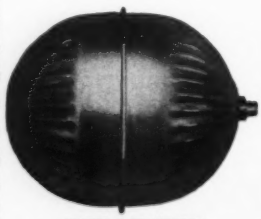
A full line in malleable iron, cast iron and brass.

Also manufacturers of brass and iron valves.

ILLINOIS MALLEABLE IRON CO.
Chicago, Ill.
MANUFACTURERS OF BRASS AND IRON VALVES

THE LEADER

The Reichert Line—
Leader Tank Balls
Leader Floats
Federal Floats
Toledo Solderless Floats



THE LEADER

TANK BALLS OR FLOATS Try
REICHERT

The Reichert Leader Tank Ball gives you something to talk about in the way of price. After all, what has more appeal than price, today?

The Reichert Leader will do everything every other tank ball will do; it will last just as long; it costs much less money.

The Leader Float boasts the same quality as the Federal and the Toledo Solderless, which have already become distinguished by their added years of service.

Write for Reichert Literature, which will open new sources of profit.

THE REICHERT FLOAT & MFG. CO.
2238 Smead Avenue Toledo, Ohio

SENTENCES THAT SELL

Write one of these BLACK BOARD EPIGRAMS on your window or bulletin board each day. Many master plumbers and heating contractors find them real business getters.

A wise enemy is better than a foolish friend.

* * *

The person, who has no will of his own, has an incurable malady.

* * *

Complaint against fortune is often an apology for laziness.

* * *

Work is nature's physician, but most people prefer some other doctor.

* * *

New year's resolutions are often buried treasures.

* * *

It's easier to earn money than it is not to spend it.

* * *

No man lives a useless life. He may serve as a warning example for others.

* * *

Labor's worst enemy is the workingman who won't work.

* * *

Ignorance is bliss until it begins to associate with egotism.

* * *

Fault is the one thing that is frequently found where it is not.

* * *

Some people use very poor material when they make up their minds.

* * *

The closer money is the harder it is to get hold of.

* * *

Politeness will often lose a man his seat in a crowded car.

* * *

The man, who tries to prove too much, often proves nothing.

* * *

Good deeds always speak for themselves when they call for improved real estate.

* * *

Take things as they come, but remember there are many things worth going after.

* * *

Life is a one-sided fight for the man who is his own worst enemy.

* * *

Some people waste a lot of time trying to obtain things they have no use for.

* * *

Many a man has been made by his enemies and unmade by his friends.

* * *

Sawing wood and carrying up coal are vanishing home industries.

* * *

Don't be afraid to use good advice for fear of spoiling it.

* * *

Curiosity often hides behind a mask of sympathy.

* * *

The ink is entitled to credit for much of the mightiness of the pen.

* * *

Many a man is out in the back yard bemoaning his luck, when fortune knocks at the front door.

* * *

A self-made man is inclined to praise his maker.

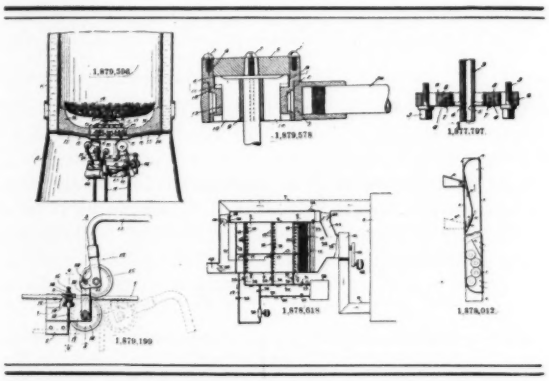
NEW IDEAS FROM PATENT OFFICE

Heating Department

1,879,596. Oil Burner. Charles L. Warner, Milford, Conn., assignor to Baird-Warner, Incorporated, Bridgeport, Conn., a Corporation of Connecticut.

1,879,578. Diestock. Leo V. Stoeltzlen, Erie, Pa., assignor to Reed Manufacturing Company, Erie, Pa., a Corporation of Pennsylvania.

1,877,797. Combined Pipe Cutter and Threader. John J. Bouchard, Bradford, Pa.



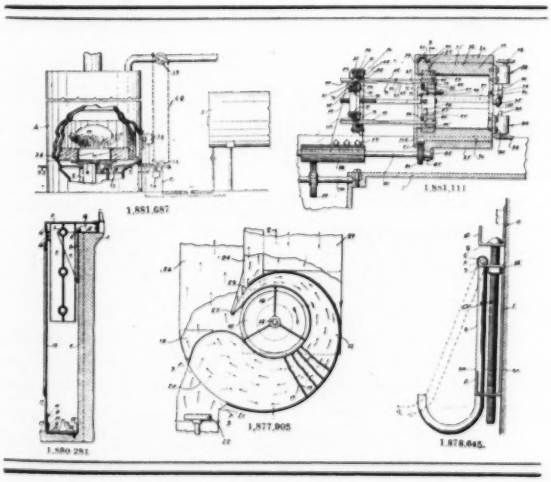
1,879,199. Pipe Bending Tool. Lee Grimes, Tillamook, Ore.

1,878,618. Air Conditioning. Irving C. Baker, York, Pa., assignor to York Ice Machinery Corporation, York, Pa., a Corporation of Delaware.

1,878,012. Air Conditioning and Distributing Unit. Alfred E. Stacey, Jr., Essex Fells, and Carlyle M. Ashley, South Orange, N. J., assignors to Carrier Engineering Corporation, Newark, N. J., a Corporation of New York.

1,881,687. Oil Burner. Selmer A. Kraft and Mathias J. Mais, St. Paul, Minn.; said Kraft assignor to said Mais.

1,881,111. Pipe Threading Machine. Edmund L. Ahern, Battle Creek, Mich.



1,880,281. Radiator Inclosure. Frank C. Reynolds, New York, N. Y., assignor, by mesne assignments, to American Radiator & Standard Sanitary Corporation, a Corporation of Delaware.

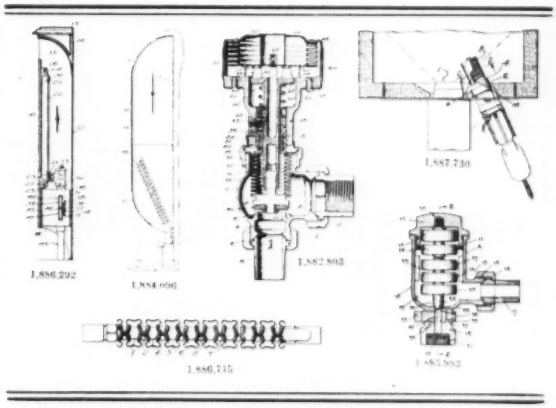
1,877,905. Air Conditioning Blower. Joseph M. Le Grand, New York, N. Y., assignor to Carrier Engineering Corporation, Newark, N. J., a Corporation of New York.

1,878,645. Radiator Bracket. Joseph B. Robinson, Rochester, N. Y.

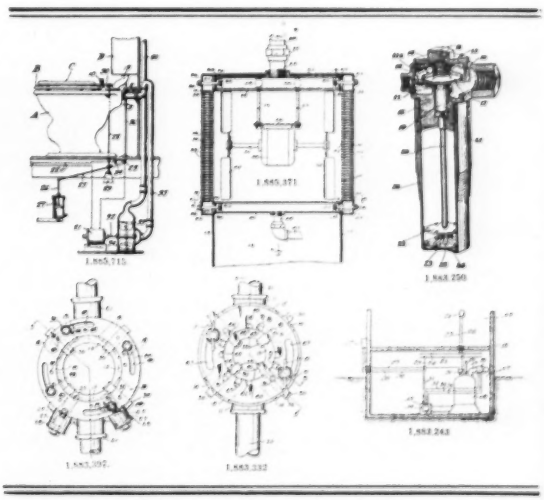
1,886,292. Radiator. Arthur B. Modine, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis., a Corporation of Wisconsin.

1,884,096. Heating Device. Arthur B. Modine, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis., a Corporation of Wisconsin.

1,882,803. Valve. Jean V. Giesler, Knoxville, Tenn., assignor to The Fulton Sylphon Company, Knoxville, Tenn., a Corporation of Delaware.



1,887,730. Ignition Mechanism for Oil Burners. James N. Macrae and Calvin P. Packard, Stamford, Conn., assignors to Petroleum Heat and Power Company, New York, N. Y., a Corporation of Delaware.



PERFEX

These 7 betterments cost you no more

1 Copper and bronze core from inlet to outlet. No corrosion; no unequal expansion; no leaking.
2 Core is suspended within unit, giving complete freedom for expansion and contraction.
3 Core can be quickly removed without disturbing cabinet, motor, wiring or even the setting of the louvres.
4 Entire unit is suspended from ceiling, eliminating load and strains on piping.
5 Three point motor support.
6 Liberally rated motor and quality construction throughout.
7 Individually tested and guaranteed.

Greater experience and greater facilities make this plus value possible. Write for engineering and installation data.

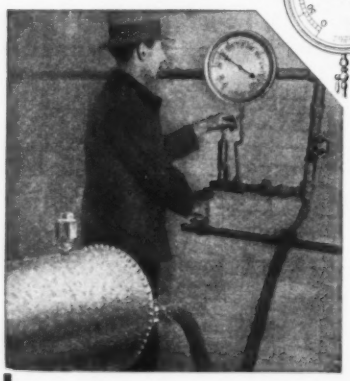
PERFEX CORPORATION
Milwaukee (*Heating Division*) Wisconsin
Heat Radiation Specialists for Over Twenty Years

Also Manufacturers of: Concealed convection heaters of advanced design and construction. Process cores for all types of pre-heating and process work.

UNIHEAT

O. K.

Says John



He's our official tester and believe us he's hard-boiled when it comes to a

HAMMER TEST and WIPING

Sometimes he's almost too particular—but we don't hold him down. So we know when our boilers pass John's test that there is no better boiler made.

Complete line of *All Welded* and *Riveted and Welded* Galvanized Boilers.

PENNSYLVANIA RANGE BOILERS

Sold Only Thru Jobbers

JOBBERS: Write us for sample of any boiler for 30-day inspection.

PENNSYLVANIA RANGE BOILER CO.
Established 1895
24th & Washington Ave. Philadelphia, Pa.

1,886,715. Production of Radiators. Thomas E. Murray, Jr., Brooklyn, N. Y., assignor, by mesne assignments, to American Radiator & Standard Sanitary Corporation, a Corporation of Delaware.

1,885,993. Radiator Return Trap. Arthur P. Crosby, Minneapolis, Minn.

1,885,371. Heating Apparatus. Arthur B. Modine, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis., a Corporation of Wisconsin.

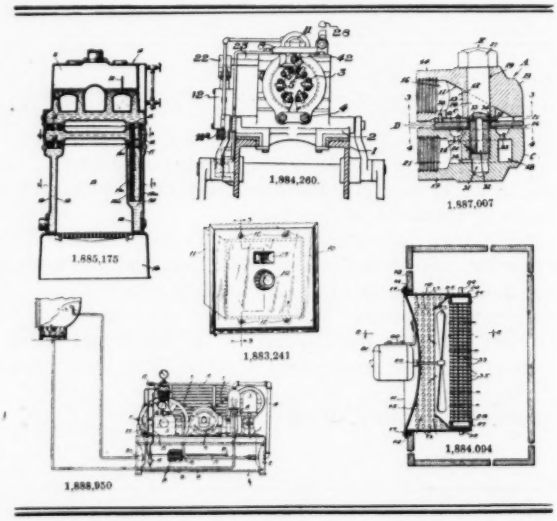
1,885,715. Ventilating Lavatory Bowl. Louis Hanson, Spokane, Wash.

1,883,250. Valve. John A. Spencer, Newtonville, Mass., assignor to The Spencer Thermostat Company, Cambridge, Mass., a Corporation of Massachusetts.

1,883,397. Diestock. Robert B. Pealer, Warren, Ohio, assignor to The Borden Company, Warren, Ohio, a Corporation of Ohio.

1,883,332. Diestock. Bradford T. Borden, Lakewood, Ohio, assignor of one-half to William A. Neracher, Warren, Ohio, and one-half to The Borden Company, Warren, Ohio, a Corporation of Ohio.

1,883,243. Burner Control Apparatus and System. John C. Bogle, River Forest, Ill., assignor, by mesne assignments, to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a Corporation of Delaware.



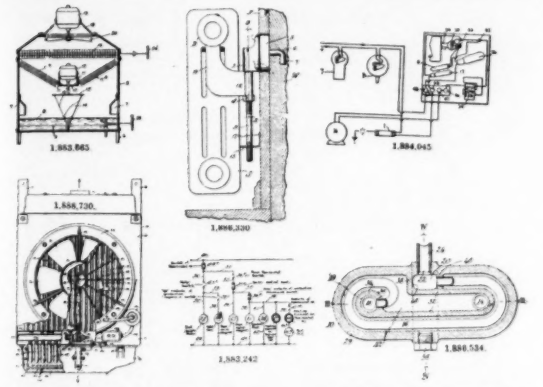
1,885,175. Boiler. Charles W. Brabbée, Bronxville, and Bernhard Goerg, Mount Vernon, N. Y., assignors to American Radiator Company, New York, N. Y., a Corporation of New Jersey.

1,884,260. Pipe Threading Machine. Max Rosenkranz, Library, and Samuel Webb, Pittsburgh, Pa., assignors to National Tube Company, a Corporation of New Jersey.

1,887,007. Oil Burner. August Behrsin, Huntington Park, Calif.

1,883,241. Electrical Switch. Louis A. M. Phelan, Elkhart, Ind., assignor, by mesne assignments, to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a Corporation of Delaware.

1,888,950. Refrigerating Unit. Earl Vernon Hill, Chicago, Ill.



1,884,094. Heat Exchange Apparatus. Arthur B. Modine, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis., a Corporation of Wisconsin.

1,883,665. Air Conditioning Unit. Walter L. Fleisher, New York, N. Y., assignor to The Cooling & Air Conditioning Corporation, New York, N. Y., a Corporation of New York.

1,884,045. Electrically Operated Fluid Fuel Burner Control. Ira E. McCabe, Chicago, Ill.

1,886,330. Radiator Hanger. John T. Evans, Kingston, Pa.

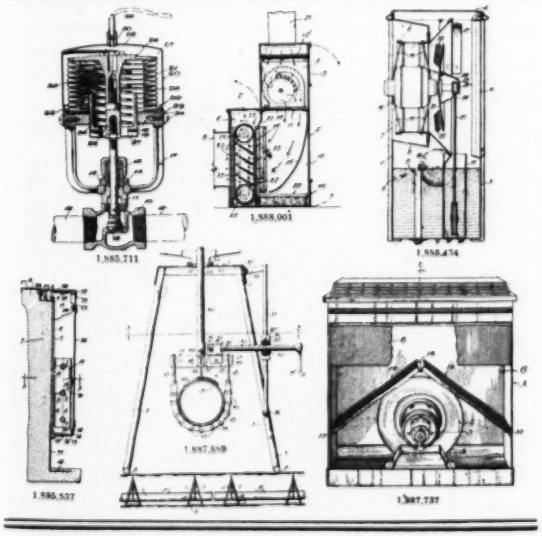
1,888,730. Heating Device. Richard D. Madison, Buffalo, N. Y., assignor to Buffalo Forge Company, Buffalo, N. Y., a Corporation of New York.

1,883,242. Oil Burner Control System. John C. Bogle, River Forest, Ill., assignor, by mesne assignments, to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a Corporation of Delaware.

1,886,534. Steam and Water Mixer. Louis J. Dornhofer, Leonia, N. J., assignor of one-half to Harold A. Fales, Leonia, N. J.

1,885,711. Temperature or Pressure Regulator. Jean V. Giesler, Knoxville, Tenn., assignor to The Fulton Sylphon Company, Knoxville, Tenn., a Corporation of Delaware.

1,888,001. Air Cleaner and Humidifier. Earl M. Hicks, Lebanon, Ind.

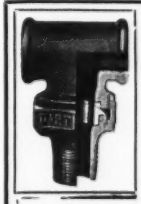


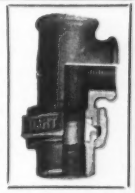
The name "ACME" is stamped on every washer

A practical assortment of 100 ACME Bibb Washers in seven sizes. Put up in a screw top can. A washer for almost every purpose. That's Acme Handipak. Or ACME washers are furnished in seven different sizes, 100 to each can.

FROM YOUR JOBBER

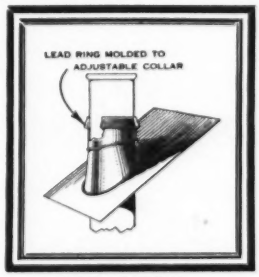
LAVELLE RUBBER CO., 320 W. Illinois St., Chicago





Now is a good time to think about the union situation for the coming year. If you are using DARTS now you are all set. If not, see one right away. Take it apart. See the Two Bronze Seats, accurately machined and ground to fit. DART construction eliminates possibility of leaks, rust and corrosion at the joint.

E. M. DART MFG. CO.
PROVIDENCE, R. I.
Sales Agents: The Fairbanks Co., New York Branches
Canadian Factory: Dart Union Co., Ltd., Toronto, Canada



1½ in. to 6 in.

HESSLER
Adjustable
ROOF FLANGE

NO. 1 ¼ TO ½ PITCH
NO. 2 FLAT TO ¼ PITCH

Furnished in Galvanized or Copper

H. E. HESSLER CO., SYRACUSE, N. Y., U. S. A.

BARBER GAS BURNERS

Create Satisfied Gas House Heating Customers

No GAS residence heating system is better than its Burner—and without an efficient burner—no heating plant stands the test.

Heating Contractors can develop a large and profitable business upon the sale and installation of Barber Automatic Conversion Burners. Our new liberal and attractive discounts, together with our sales helps will be sent immediately upon request. Write us without delay.

THE BARBER GAS BURNER CO.
3702-04 Superior Ave., Cleveland, Ohio

WHERE KINGSHIGHWAY MEETS LINDELL BLVD.

in old **ST. LOUIS** MISSOURI

Where the city meets the country, stands distinctive Hotel Chase - a truly modern hostelry alive with spirit of today... Location, rooms, food, service, facilities, "atmosphere" and a sincere desire to serve you well at sensible prices is our promise.. Very convenient for Automobile Tourists . . . .Unequalled convention facilities.

RATES FOR ONE $3. TO $5. PER DAY
RATES FOR TWO $5 TO $7. PER DAY

Attractive Rates for Permanent Guests

HOTEL CHASE

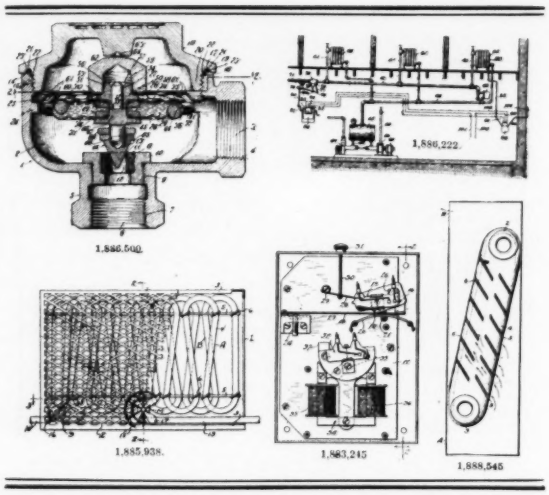
J.A. HADLEY *Manager*

A Choice of the Best

That's what you get in replies from a DOMESTIC ENGINEERING Classified Advertisement.

No matter what your problem—if you want a job, or a man for a job, if you have some used equipment to sell or want to buy some, if you want to know what the leading books on plumbing and heating are, if you want bids on a job—a DOMESTIC ENGINEERING Classified Advertisement will solve that problem.

Domestic Engineering
1900 Prairie Avenue, Chicago, Illinois



1,888,434. Humidifier. Lawrence M. Persons, St. Louis, Mo., assignor to The Emerson Electric Mfg. Co., St. Louis, Mo., a Corporation of Missouri.

1,885,537. Radiator Inclosure. Thomas E. Murray, Jr., Brooklyn, and Frank C. Reynolds, New York, N. Y., assignors, by mesne assignments, to American Radiator & Standard Sanitary Corporation, a Corporation of Delaware.

1,887,889. Pipe-Handling Tool. John Henery Owens, Elgin, Ill.

1,887,737. Air Filter for Heating and Ventilating Units. Wilfred Shurtleff, Moline, Ill., assignor to The Herman Nelson Corporation, Moline, Ill., a Corporation of Illinois.

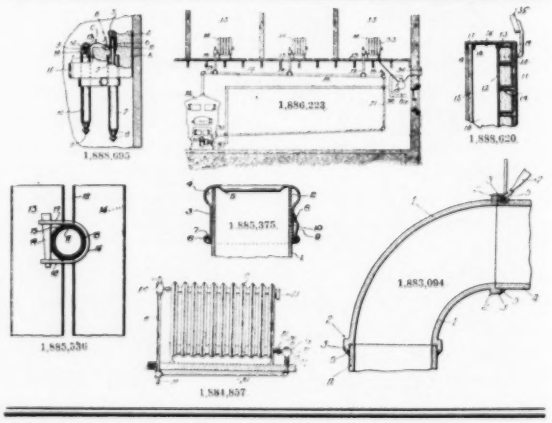
1,886,500. Thermostatic Trap. Ferdinand Edward Schmidt, Marshalltown, Iowa, assignor to C. A. Dunham Company, Marshalltown, Iowa, a Corporation of Iowa.

1,886,222. Method of Heating by Steam. Fred I. Raymond, River Forest, Ill.

1,885,938. Wall Radiator. Horace S. Meldahl, New York, N. Y.

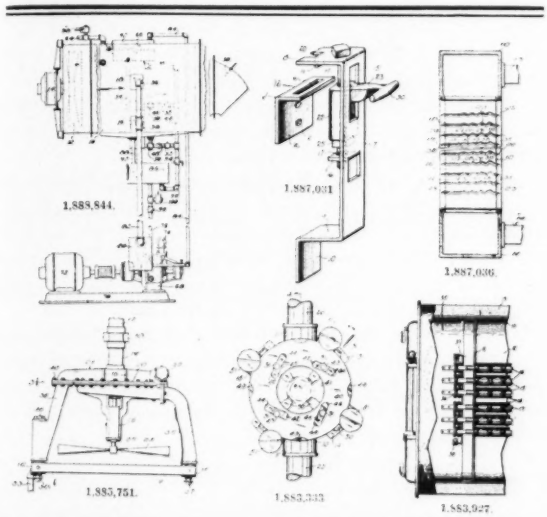
1,883,245. Electrical Switch. John C. Bogle, River Forest, Ill., assignor, by mesne assignments, to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a Corporation of Delaware.

1,888,545. Heating Convector. Robert S. Wentworth, Johnstown, Pa., assignor to National Radiator Corporation, Johnstown, Pa., a Corporation of Delaware.



1,888,695. Oil Burner Ignition Device. Milton A. Powers, Detroit, Mich., assignor to The Timken Silent Automatic Company, Detroit, Mich., a Corporation of Michigan.

1,886,223. Steam Heating System. Fred I. Raymond, River Forest, Ill.



1,888,620. Solar Heater. Warren F. Clark, Philadelphia, Pa., assignor to Automatic Electric Heater Company, Pottstown, Pa., a Corporation of Delaware.

1,885,375. Pipe Thread Protector. Lucien G. Ponce, Parnassus, Pa., assignor to Allegheny Steel Company, Brackenridge, Pa., a Corporation.

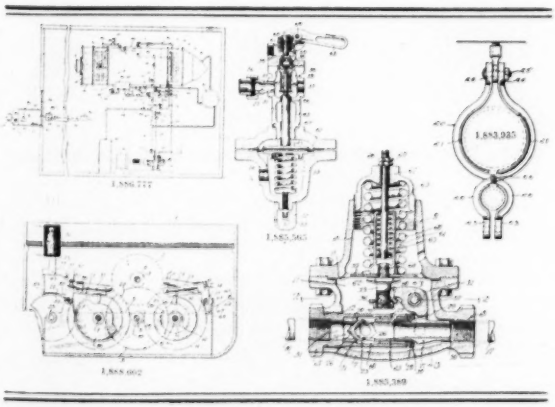
1,883,094. Pipe Fitting for Welding. Edward Hall Taylor, Oak Park, Ill.

1,885,536. Radiator. Thomas E. Murray, deceased, Brooklyn, N. Y., by John F. Murray, Joseph B. Murray, and Thomas E. Murray, jr., executors, Brooklyn, N. Y., assignors, by mesne assignments, to American Radiator & Standard Sanitary Corporation, a Corporation of Delaware.

1,884,857. Steam Trap. William H. Randall, Chicago, Ill.

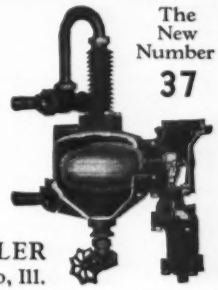
1,888,844. Air Conditioning Apparatus. Samuel M. Anderson, Sharon, Mass., assignor to B. F. Sturtevant Company, Hyde Park, Mass., a Corporation of Massachusetts.

1,887,031. Radiator Supporting Hanger. Clyde L. Lyon, Everett, Wash.



Install a PROVED Feeder!

—the only feeder with the cool, scale-free feed valve that never sticks or binds—the only line that includes a feeder with the quick hook-up feature for small boilers—the most widely installed and thoroughly proved automatic water level controls on the market.



The New Number **37**

McDONNELL & MILLER
400 N. Michigan Ave., Chicago, Ill.

Fig. 19411 Taber Midget Sump Pump

It works . . . . . when needed most

After heavy rain-storms there is an increased demand for Taber automatic Midget Sump Pumps. Frequently they replace "low price" cellar drainers inadequately motored.

Why wait for a peak load to tell whether the pump will work? Avoid troublesome, profitless service calls . . . install Taber first. The owner of any sump pump expects "Dry Cellar Insurance." He gets it with a Taber Midget.

Bulletin and prices on request. Also see Page 632 Domestic Engineering Catalog.

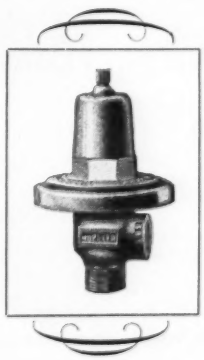
TABER
TABER PUMP CO. *Est 1859*
290 Elm Street, Buffalo, New York

SPEED MEANS PROFIT

For list of distributors see McRae Blue Book for 1933.

With Yager's Soldering Salts, solder flows faster and you finish your job quicker. This time saved means money to you. See Yager's in Domestic Engineering Plumbing and Heating Catalog.

ALEX R. BENSON CO., INC., HUDSON, N. Y.
Sales Agents in Canada: Canadian General Electric Co., Ltd., Montreal and Toronto



MUELLER CO.
Decatur, Illinois
1857 » » 1933

The Mueller H-9045 Relief Valve constructed of non-corrosive bronze is a positive protection to water storage heaters.

• WARNOCK •

Triple Wear Wrenches

The Warnock wrench is easyto adjust. The strap is arranged in such a way that it can be drawn absolutely tight in *one* movement. Notice, too, that this strap is triple folded at the point of greatest strain.

For chrome, brass and nickle plated pipe

WARNOCK MFG. CO., Worcester, Mass.

ACHESON

THE BEST Brass Fittings that experience, modern machinery, rigid inspections and conscientious effort can produce.

ACHESON MFG. CO., RANKIN. PA.

BRASS FITTINGS

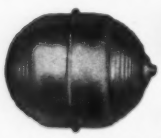
THE "MODERN" RANGE BOILER

30 and 40 Gallons
200, 250 and 300 lb. Test

In the above capacities the top and body of the "Modern" Boiler is formed from a single extra-heavy Copper Shell and drawn cold-seamless to the bottom, thus eliminating the top joint and the side seam and leaving only a bottom joint. The bottom head is hydraulically pressed on the shell and riveted securely with Copper Rivets closely spaced. Over the rivets a seamless copper band is spun and sweated, reinforcing the joint and making a solid construction which is impossible to come apart under any circumstance. Every boiler is reinforced internally and guaranteed against collapse. The interior is thoroughly tinned.

Sold Through Wholesalers Only

HAYES MFG. CO., Paterson, N. J.



4"x5" Oval Float

NO-SOL COPPER FLOATS

No-Sol Floats incorporate all features necessary to the satisfactory performance of a tank float.

Each float is individually tested and guaranteed.

INCORPORATED 1907

The AYLING & REICHERT CO.

3047 N. Erie St. Toledo, Ohio

5" Round Float

1,887,036. Radiator Fin. Arthur B. Modine, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis., a Corporation of Wisconsin.

1,885,751. Heating Device. Arthur B. Modine, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis., a Corporation of Wisconsin.

1,883,333. Diestock. Bradford T. Borden, Lakewood, Ohio, assignor of one-half to William A. Neracher, Warren, Ohio, and one-half to The Borden Company, Warren, Ohio, a Corporation of Ohio.

1,883,927. Electric Heater. Carl L. Ipsen and Albert N. Otis, Schenectady, N. Y., assignors to General Electric Company, a Corporation of New York.

1,886 777. Air Conditioning Apparatus. Samuel M. Anderson, Sharon, Mass., assignor to B. F. Sturtevant Company, Boston, Mass., a Company.

1,885,565. Fluid Pressure Actuated Control Mechanism. Charles M. Terry, Decatur, Ill., assignor to A. W. Cash Company, Decatur, Ill., a Corporation of Delaware.

1,883,935. Pipe Hanger. John J. Kelley, New Haven, Conn.

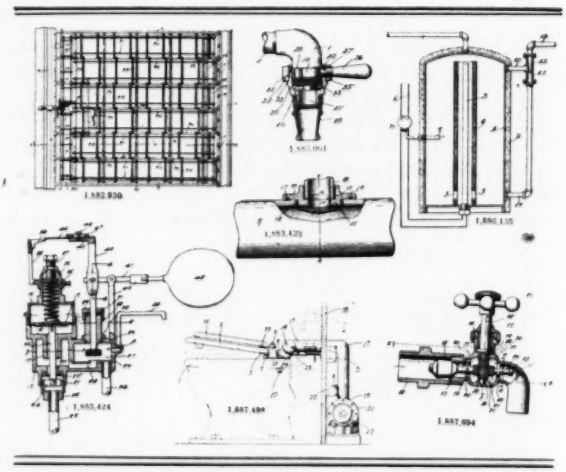
1,888,602. Controlling Apparatus for Oil Burners. James N. Macrae and Calvin P. Packard, Stamford, Conn., assignors to Petroleum Heat and Power Company, New York, N. Y., a Corporation of Delaware.

1,885,389. Pressure Reducing and Regulating Valve. Paul C. Temple, Decatur, Ill., assignor to A. W. Cash Company, Decatur, Ill., a Corporation of Delaware.

Plumbing Department

1,882,930. Sewage Disposal System. Gustav R. Roddy, Milwaukee, Wis., assignor to Chain Belt Company, Milwaukee, Wis., a Corporation of Wisconsin.

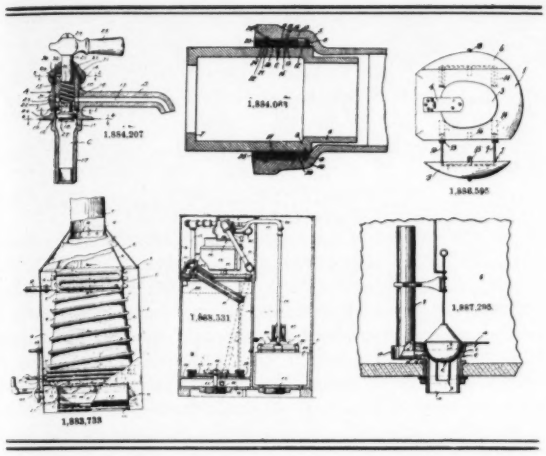
1,883,061. Faucet. Edward P. Stein, Chicago, Ill., assignor to The Bastian-Blessing Company, Chicago, Ill., a Corporation of Illinois.



1,883,439. Sewer Pipe Tap. David G. Adams, Spartanburg, S. C.

1,886,135. Water Heater. Vernon L. Tannehill, Fort Wayne, Ind., assignor to Fort Wayne Engineering and Manufacturing Company, Fort Wayne, Ind.

1,885,424. Hydraulic Control Faucet and Ball Cock. Leo A. Fischer, Springfield, Ohio.



1,887,498. Toilet Ventilator. William J. Connors, San Jose, Calif., assignor to Sani-Toil Trust Association, Washoe County, Nev., a Common-Law Trust.

1,887,694. Valve. Frederick M. Masker, Plainfield, N. J.

1,884,207. Faucet. Julius Pollock, Cleveland Heights, Ohio, assignor to The Republic Brass Company, Cleveland, Ohio, a Corporation of Ohio.

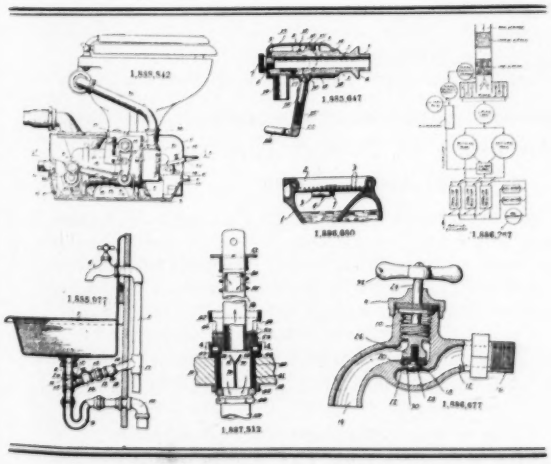
1,884,063. Pipe Joint. James R. McWane, Birmingham, Ala., assignor to McWane Cast Iron Pipe Company, Birmingham, Ala., a Corporation of Alabama.

1,886,595. Baby Sanitary Toilet Seat. Edwin G. Sandquist, Wilmington, Calif.

1,883,733. Gas Water Heater. Otto W. Hahn, San Francisco, Calif.

1,888,531. Water Softener Brine Apparatus. Stanley G. Harwood, Minneapolis, Minn., and Donald Griswold, Los Angeles, Calif., assignor, by mesne assignments, to The Permutit Company, Wilmington, Del., a Corporation of Delaware.

1,882,735. Soldering Flux. Clifford L. Barber, Chicago, Ill., assignor to Kester Solder Company, Chicago, Ill., a Corporation of Illinois. The process of forming an anhydrous composition useful as a soldering flux which comprises reacting about 8 to 20 parts of zinc chloride with not less than 88 parts of a fatty acid selected from the group consisting of oleic, palmitic and stearic acids to chemically convert all of the zinc chloride.



"Only $3 for all this?"

You'll be surprised, too, when you see how much luxury and convenience you can enjoy at the Hotel Lexington for as little as $3 a day.

And here's another fact that'll make your expense account beam with gratitude—it costs only $1 a day more for two persons at the Lexington. A room which is $3 for one, for instance, is only $4 for two persons.

HOTEL LEXINGTON

In Grand Central Zone, Lexington Ave. at 48th Street

NEW YORK CITY

CHARLES E. ROCHESTER, *General Manager*

Make PROFITS on Remodeling

THE KAINER PRESSURE GOVERNOR

Accurate

Simple

Safe

Automatic Control for Hot Water Heating Systems

Write today for prices and Bulletin 32-B

A. S. M. E. Approved

KAINER & COMPANY CHICAGO

761-771 MATHER STREET

You wouldn't think of missing your daily paper « « «

yet it does not begin to help you as your business paper does . . so why not spend a minute to send in your subscription. You will soon realize the tremendous help you have been doing without.

DOMESTIC ENGINEERING

1900 PRAIRIE AVENUE • • CHICAGO

Look for the Arm-and-Hammer

ARMSTRONG BROS.

Improved CHAIN VISE

A light, compact vise of unusual strength and capacity; it goes into tool bag; attaches anywhere. Note these features:

1. Drop Forged 1-piece Jaws.
2. Drop Forged Base.
3. Drop Forged Handle.
4. Alloy Steel Screw with Hardened Steel Nut.
5. Proof-tested Chain.

Patented 1-piece Jaw (top view)

Write for Catalog P-10

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
323 N. Francisco Ave., Chicago, U. S. A.

The **Breakers**

ON THE BOARDWALK

Atlantic City, N. J.

Features New Low Rates for Boardwalk Hotel Accommodations

PER DAY $5 PER PERSON

With Meals and Private Bath

HOT AND COLD SEA WATER
EXCELLENT CUISINE ∴ GARAGE ATTACHED
IDEAL CONVENTION FACILITIES

HOTEL LENOX

New Low Rates

for the finest, most comfortable accommodations in town. Excellent food. Convenient location. 3 minutes from Peace Bridge to Canada. 20 miles from Niagara Falls.

Free—Official AAA Road Map and Booklet. Write

CLARENCE A. MINER, PRES.
140 North St., near Delaware

BUFFALO, N. Y.

1,887,295. Silencer for Water-Closet Tanks. Joseph Freed, San Francisco, Calif.

1,888,842. Marine Toilet. Percy Allan, Montclair, N. J., assignor to A. B. Sands & Son Company, New York, N. Y., a Corporation of New York.

1,885,647. Receptacle Actuated Faucet. Ivar W. Waterval, Evanston, Ill.

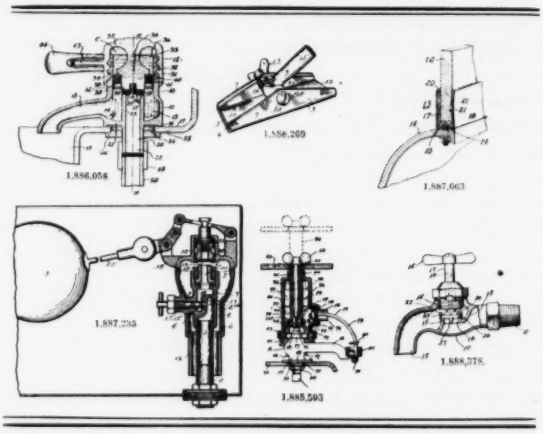
1,886,680. Deodorizing Device. Charles D. Holmes, Long Beach, and Harvey W. Gamel, Los Angeles, Calif.

1,886,267. Treating Sewage. George H. Gleason, Montclair, N. J., and Alfred C. Loonam, Brooklyn, N. Y., assignors to Guggenheim Brothers, New York, N. Y., a Copartnership.

1,885,977. Drain Pipe for Flushing Attachments. Louis S. Denison, Santa Cruz, Calif., assignor to Alberta E. Denison, Santa Cruz, Calif.

1,887,512. Flush Tank. Philip E. Meaney, Worcester, Mass., assignor to David E. Sherin, Worcester, Mass.

1,886,677. Valve Structure. James Higgins and John L. Schultz, Jackson, Mich.



1,886,058. Faucet. Edward J. Shoemaker, Canton, Ohio.

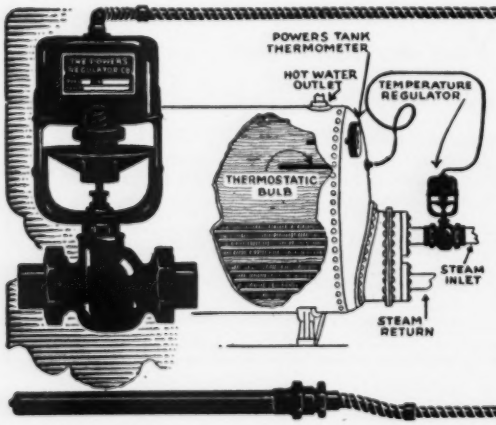
1,888,269. Sewer-Cleaning Implement. Ward F. Herst, Grand Rapids, Mich., assignor to Wolverine Brass Works, Grand Rapids, Mich., a Corporation of Michigan.

1,887,663. Plumbing Fixture Clip. Henry M. Reed, Jr., Louisville, Ky., assignor to Standard Sanitary Manufacturing Company, a Corporation of New Jersey.

1,887,235. Valve Mechanism. Louis A. Cornelius, Grand Rapids, Mich., assignor to Wolverine Brass Works, Grand Rapids, Mich., a Corporation of Michigan.

1,885,593. Under Pressure Faucet and Valve Tool. Arthur J. Downer, Minneapolis, Minn.

1,888,378. Faucet. Miguel Esnard, Matanzas, Cuba.



$135. Invested in Powers Control Saves $1,145. a Year

Metered steam records of Aldis & Co., who own and operate many buildings in Chicago, showed a reduction of 154,000 pounds of steam a month with Powers Temperature Control on hot water heaters in their Champlain Building.

Besides preventing steam wasted by OVER-heated water, complaints about hot water were practically eliminated.

As Powers Tank Regulators usually give 10 to 15 years of Dependable Control, the profit on a $100 investment is often more than $10,000.

Phone or write our nearest office for prices or engineering data

THE POWERS REGULATOR CO. Chicago: 2716 Greenview Ave. New York: 231 East 46th St.
Offices in 43 Cities — See your telephone directory

PAGE(S) MISSING

Pg 133-134 wrong index for V. 140

8 cents for each word including heading and address. Count seven words for keyed address. Minimum $2.00 for each insertion.

CLASSIFIED ADVERTISING

One inch $4.00. Cash must accompany order. Copy should reach us eight days in advance of publication date.

Situations Open

WANTED

Salesman, experienced, who has been calling on plumbing supply houses in New England states. On commission basis. Address Newark Fireproof Sash & Door Co., 138 Avon Ave., Newark, N. J.

WANTED: SALESMEN WITH ESTABlished trade or acquaintance among large oil and gas companies, plumbing and heating jobbers, by the manufacturers of the famous INSA-LUTE ACID-PROOF CEMENT, to sell our improved pipe joint COMPOUNDS, KNO-LEAK and SEALLAC GRAPHITE PASTE. Volume sales, good commissions. Address TECHNICAL PRODUCTS COMPANY, Pittsburgh, Pa.

WANTED: SALESMAN — TO SELL full line of enamelware in New York, Brooklyn and Long Island territory. Experience necessary. Salary, $35.00 per week. Write all particulars. Address Key 815, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

Situations Wanted

CAPABLE MAN

for Plumbing, Heating, Mill Supplies and Oil Equipment, desires connection with reliable house as sales representative calling on manufacturers and jobbers. Well known to manufacturers and jobbers, especially in middle and western states. Life experience in office and roadwork. Would consider office position. Address Key 818, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

SITUATION WANTED: MANAGER OR Foreman. Can take full charge of shop. Plumbing, heating and sheet metal work. Will go anywhere. 25 years' experience in handling mechanics and laborers. Address Chas. R. Friis, 84 Hillside Avenue, Midland Park, N. J.

SITUATION WANTED — PLUMBER 20 Years' Experience Journeyman. Also Master; can handle help. Expert on repairs. Go anywhere. Address Key 819, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

For Sale

FOR SALE—TOLEDO POWER DRIVE machine Number 1054; direct current; never been used. Horse-power, 1—volts, 230—amperes, 4 and 5. Address Mrs. E. D. Hornbrook, 521 Garfield Ave., Kansas City, Mo.

Representatives Wanted

EXTRA MONEY

We buy for cash complete stocks, job lots and surplus merchandise of plumbing and heating supplies. Men who call on manufacturers or jobbers can earn substantial commissions without interfering with present connections. Furnish us with leads where such material is available; we do the rest. All territories available. Address Key 820, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

MANUFACTURERS' REPRESENTAtives on commission basis to represent prominent complete line manufacturer of sanitary pottery. Territories available: Oklahoma City and vicinity; Pittsburgh; western Pennsylvania and West Virginia; also state of Iowa. Unusual opportunity for producers. Give full details when replying. Address Key 816, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

RADIATOR SALES OPPORTUNITY

Long established, well rated manufacturer is now in production on a new type of heating radiator which authorities claim to be the most attractive and highly developed radiator yet produced.

Applications for sales rights in various territories are now being received. Substantial immediate profits and a promising future are available to those selected.

Properly qualified sales representatives who can operate upon a straight commission basis should write for particulars. State experience, connections and sales records. Address P. O. Box 1222, Pittsburgh, Pa.

Lines to Handle

VELVET WATER SOFTENERS

Superb full line excelling in appearance and sales appeal. The electric operated, completely automatic model, simple and reliable, is what dealers and public have wanted. Effective printed matter. Splendid profits will interest active marketing dealers. Address H. L. G. Co., Kalamazoo, Mich.

HIGH GRADE, NATIONALLY KNOWN line of malleable and cast iron pipe fittings will be distributed through sales representatives with following among plumbing and heating contractors on attractive commission basis. Applications stating full details will be received in confidence from capable men and open territory assigned. Address Key 817, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

WANTED: PLUMBING SUPPLY houses in each city in territory west of Philadelphia, Penn., to handle range oil burners. We have a full line. Will give exclusive territory to concern that will push the sales. Write for full particulars; also sample. Address P. O. Box 6032, Bridgeport, Conn.

WANTED — SALESMEN CALLING ON Institutional, hardware and plumbing supply trade to handle DRAIN PIPE SOLVENT for manufacturer. Address NATIONAL ENGINEERING COMPANY, 1826 Greenmount Ave., Baltimore, Md.

Dealers Wanted

AUTOMATIC COAL STOKER DEALER WANTED

by reliable and experienced manufacturer having a complete line of anthracite and bituminous stokers with and without automatic ash removal. Competitive prices. Attractive discounts. Only responsible party with merchandising experience needs to inquire for details. Address Key 809, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

Miscellaneous

WE PAY CASH for surplus PIPE COUPLINGS and THREAD PROTECTORS

Your inventory no doubt shows that you have a considerable quantity of couplings and thread protectors on hand. Turn this dead stock into quick cash by writing for our HIGHEST MARKET PRICES—TODAY.

MID VALLEY STEEL COMPANY
2700 S. First St. St. Louis, Mo.

PLUMBERS' BIN LABELS

Send for free booklets for plumbers: "How to Label Plumbers Stock Bins"; "Training the Store Room Apprentice to Know His Goods"; "How to Tag Stop Valves"; "How to Lay Out the Plumbing and Heating Shop"; samples of Plumbers Bin Labels; metal card holders; celluloid protectors.

HADDON BIN LABEL CO.,
HADDON HEIGHTS, N. J.

AUDEL'S PLUMBERS' GUIDE

The standard educator; teaches the theory and practice of plumbing, heating, steamfitting, gasfitting and sheet metal work. Answers your questions. Explains the new short cuts, modern methods and inside trade information. Easy to understand. A complete reference and home study course. Fully illustrated, authentic, up-to-date, with plumbers code. Four volumes, pocket size; price $6 complete, payable $1 a month. Write today for FREE Plumbers Folder. THEO. AUDEL & CO., 65 W. 23rd St., New York.

WE MAKE A SPECIALTY OF JOB Tickets, Time Sheets, Letter Heads, Envelopes, etc., for Plumbing Contractors. Prices include delivery to Eastern Points. Samples mailed. Address Louis Fink & Sons, School Building, Laurel Springs, New Jersey.

The Most Reliable
PIPE COUPLING BUYERS
In The Country

Write us about your surplus pipe couplings

CAPITOL MFG. & SUPPLY CO.
550 Nicholas Street, Columbus, Ohio

Index to Advertisers

January, 1933

Acheson Mfg. Co.....130
Air Reduction Sales Co.... 23
American Brass Co..... 12
American Radiator Co.....
.....Inside Back Cover
American Rubber Products
Co. 106
American Sanitary Mfg. Co. 62
Armstrong Bros. Tool Co..132
Ayling & Reichert Co.....130

Barber Gas Burner Co.,
The 127
Beaton & Cadwell Mfg. Co.121
Benson Co., Inc., Alex R...123
Blake Specialty Co.....110
Burnham Boiler Corp..... 79
Byers Co., A. M..... 5

Capitol Brass Division of
Bohn Aluminum & Brass
Corp. 107
Central Tube Co..... 69
Century Engineering Corp. 88
Chase Brass & Copper Co.,
Inc.....Inside Front Cover
Chicago Faucet Co..... 20

Dahlquist Mfg. Co.....113
Dart Mfg. Co., E. M.....127
Detroit Lubricator Co..... 81
Dole Valve Co.....21 and 22
Douglas Co., The John..... 10
Duriron Co., Inc., The.....108

Erskine Copper Radiator
Corp. 66
Excelso Products Corp.... 87

Fretz-Moon Tube Co., Inc.113

Gerstein & Cooper Co.....116

Hayes Mfg. Co.....130
Hessler Co., H. E.....127
Hindley Mfg. Co..... 97
Hoffman Specialty Co..... 9
Hotel Breakers 132
Hotel Chase 128
Hotel Lenox 132
Hotel Lexington 131

Illinois Malleable Iron Co.124
Imperial Brass Mfg. Co....138

Jarecki Mfg. Co.....114
Jenkins Bros. 109
Johns-Manville 103

Kainer & Co.....131
Keeney Mfg. Co..... 65
Kennedy Valve Mfg. Co.... 18
Koven & Bro., Inc., L. O... 98

Lavelle Rubber Co.....127
Leland Electric Co..... 84
Leonard-Rooke Co. 117

Malleable Iron Fittings Co. 8
McDonnell & Miller.....129
Miller Co., Chas. A..... 58
Minneapolis Honeywe.l
Regulator Co. 89
Moore Valve Corp., J. W...110
Mueller Brass Co..... 11
Mueller Co. 129
Myers & Bro. Co., F. E....115

National Pipe Bending Co.. 97
National Radiator Corp.... 14
National Regulator Co.... 87
Norristown Magnesia & As-
bestos Co. .....16 and 17
Northern Indiana Brass Co.
.....6 and 7

Peck Bros. & Co., The..... 25
Penberthy Injector Co..... 57
Penna. Range Boiler Co...126
Perfex Corp. 126
Powers Regulator Co.....132

Radiator Specialty Co.....121
Raymond Co., F. I..... 85
Reading Iron Co..... 19
Red Jacket Mfg. Co.....120
Redlon, O. M.....122
Reichert Float & Mfg. Co..124

Sarco Co., Inc.....118
Scovill Mfg. Co..... 96
Silent Glow Oil Burner
Corp. 72
Smooth-On Mfg. Co.....117
Spang, Chalfant & Co., Inc. 61
Speakman Co. 13
Standard Sanitary Mfg. Co.
.....Back Cover

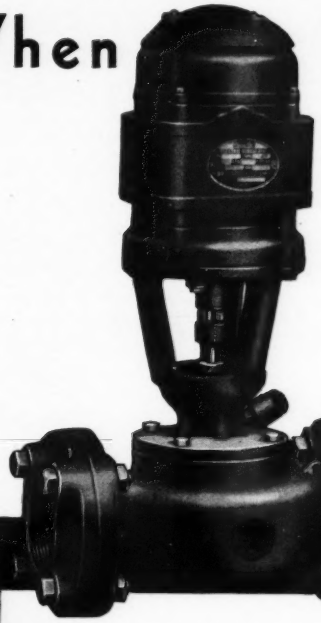
Taber Pump Co.....129
Thompson & Son Co., Henry
G. 116
Thrush & Co., H. A.....137
Toledo Pipe Threading Ma-
chine Co. 26
Trimont Mfg. Co.....101

Vogel Co., Jos. A..... 3

Warnock Mfg. Co.....130
Warren Webster & Co..... 15
Weis Mfg. Co., Henry..... 95
Westco Pump Corp.....111
Wolverine Brass Works...123
Worcester Brush & Scraper
Co. 122

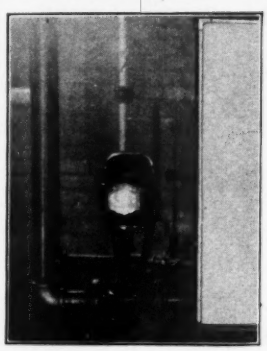
• When Winter Comes

many a heating plant needs a THRUSH WATER CIRCULATOR

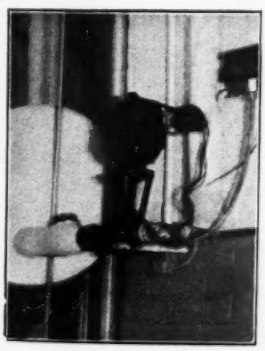


MADE IN THREE SIZES

The Thrush Water Circulator is entirely self-contained and shipped as a unit ready to install. It is made in 1½", 2", and 3" sizes. Installation is simple.



Thrush Water Circulator installed on a Hot Water Heating Plant assures greater efficiency and less fuel consumption with any type of fuel. It lowers boiler temperatures and provides more satisfactory home heating.



Thrush Water Circulator applied to Water Storage System reduces fuel consumption, reduces water-waste and keeps the water circulating so that the entire supply is held at the same temperature.

•

SILENT DEPENDABLE

•

• MAIL THIS COUPON NOW!

• WITH the arrival of cold weather you have real opportunities to get new business with the Thrush Water Circulator. There are many large jobs which really need forced circulation, and these needs are emphasized when the temperature drops. A Thrush Water Circulator can be installed quickly, with comparatively little interference in the heating of the building—and it will positively and immediately increase the efficiency of the job and insure hot radiators at the farthest point from the boiler.

On oil or gas burning jobs, you have a special opportunity this year—with everyone economizing. With the addition of Thrush Water Circulator an oil or gas fired job will burn much less fuel and give more satisfactory results. It is possible to carry lower boiler temperature and shorten the running time of the burner, which means a genuine saving.

Whenever you run into a "sick" job of any kind, think of the Thrush Water Circulator. It provides positive forced mechanical circulation, which distributes heating units throughout the plant much more rapidly than thermal circulation can do it. It is also ideal for domestic storage systems, and assures a constant supply of hot water at every faucet.

H. A. THRUSH & COMPANY
PERU, INDIANA

H. A. Thrush & Company
Peru, Indiana—P. O. Box No. 459

MAIL THIS NOW!

Send us your new bulletin describing Thrush Water Circulators and complete information on the Thrush line of heating specialties. We are going after business *now*.

NAME.....

ADDRESS.....

CITY.....STATE.....

THRUSH

FORCED CIRCULATION FOR BETTER HEATING

The Watrous SIMPLE REGULATION is the BACKGROUND of Uninterrupted Service

ALL over the country, in leading apartments, schools, hospitals, homes and public buildings, Watrous Flush Valves maintain perfect records for service because of their simple regulation and dependable operation.

All of the well-known buildings on this page are free from flush valve trouble because Watrous Flush Valves were installed when they were built. Modern buildings demand Watrous simplicity and uninterrupted service. Progressive architects and contractors recommend Watrous Flush Valves because of the ease with which they can be adapted to any installation. A turn of the adjusting screw, as shown, instantly and permanently regulates the length of flush for any make closet bowl and any pressure.

Watrous is the *only* diaphragm type flush valve that permits *outside regulation* without restricting the waterway, and has a self-cleansing bypass. No need to shut off the water—no need to take the valve apart.

Be modern, demand the best and get it—ask for Watrous Flush Valves.

Order From Your Jobber

THE IMPERIAL BRASS MFG. CO.
1231 West Harrison Street, Chicago, Illinois